MINESHAS PROGRAM

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DIVISION OF OIL GAS & MINING

FIELD ACTIVITIES REPORT

LEEDS SILVER RECLAMATION SITE

Washington County, Utah UTD981550619

Utah Department of Health Bureau of Environmental Response and Remediation Prepared By: Jason L. Knowlton

> Draft 12/17/90 Revised 3/7/91

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1.0 INTRODUCTION

The Leeds Silver Reclamation Site (UTD98I5506I9), located approximately one mile northwest of Leeds, Utah in the Silver Reef Mining District, is an inoperative ore processing facility which utilized an acid heap leach process for the extraction of copper and silver. Sampling was conducted at this site by the Utah Bureau of Environmental Response and Remediation (UBERR) on July 31 and August 1, 1990. A Sampling Plan, dated May 11, 1990, was prepared for the site which outlined the procedures to be followed for sampling this site. This report outlines the procedures which were actually used for the sampling of the Leeds Silver Reclamation Site and documents any deviations from the plan.

The sampling activities were undertaken as part of a Screening Site Investigation under authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). UBERR conducts these activities under agreement with the U.S. Environmental Protection Agency (EPA). The information obtained will be used for purposes of scoring the site according to the Hazard Ranking System (HRS) of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP).

The scope of sampling activities involved the collection of 6 sediment samples, 4 soil samples, 5 surface water samples, and 2 ground water samples, for a total of 17 samples, including all quality control samples.

The objectives of sampling, as stated in the Sampling Plan, were as follows:

- The ore materials deposited on the leach pad will be characterized to determine whether they present a significant hazard from the on-site exposure pathway and whether hazardous materials on the pad may potentially become windborne and migrate off-site via the air migration pathway.
- Sediments and surface water in three pond areas will be characterized to further assess the on-site exposure hazards and to determine the hazardous nature of leachates in the water which may potentially migrate off-site via the surface and ground water migration pathways.
- Field observations of the drainage basin will be made with regard to topography to determine if surface water can migrate off-site and into Quail Creek approximately 3 miles downstream.
- An existing water well near the south edge of the site and presumably downgradient to the site will be sampled to determine if hazardous constituents from the site have contaminated this water supply. Other information needed to assess the potential for contamination of the ground water migration pathway will be obtained.

Other location specific information, such as demographic analysis and water use survey, needed to effectively score the site under the revised HRS will be obtained during the sampling event. Waste characteristics, especially waste quantity and waste containment, will be evaluated for each waste source.

These objectives were attained during the sampling event.

The sampling team consisted of the following UBERR personnel:

Jason Knowlton Robert O'Brien

Project Manager Sampler

2.0 BACKGROUND

Background information about the site was obtained from CERCLA files at UBERR, permit and reclamation files at the Utah Division of Oil, Gas and Mining (DOGM), personal communication with the property owner, and from publications of the Utah Division of Water Resources and the Utah Geological and Mineralogical Survey.

2.1 LOCATION AND DESCRIPTION

The Leeds Silver Reclamation Site is located at the North 1/4 Corner of Section 12, Township 4l South, Range 14 West, Salt Lake Baseline and Meridian in Washington County, Utah. Leeds, Utah (population 260) is approximately one mile southeast of the site along the east side of Interstate 15. The small town of Silver Reef (population approximately 150) is located about one mile north of the site. A few rural residences are located to the east and south of the site within a four mile radius and plans have been made for a housing development about 1/2 mile south of the site. Figure 1 is a Site Location map.

A large heap leach pad covers 3.8 acres near the center of the site. At the south end of the leach pad is a small collection pond and south of this is an overflow pond. These two ponds cover 0.9 acres. The leach pad and both of these ponds are underlain by an asphalt liner. A levee extends partway across the drainage to the south of the overflow pond forming a secondary surface water impoundment to contain the runoff from the site should the other ponds overflow. North of the leach pad is a 1.3 acre ore stockpile and south of this stockpile, about half the distance to the leach pad, are three 72-gallon electrical transformers. The mill area covers 0.5 acres in the southwest corner of the site.

2.2 SITE HISTORY

The site is currently owned, and was operated, by 5M, Inc. of Hurricane, Utah. Jerry Glazier is the President and owner of the company. The asphalt leach pad and ponds were constructed around 1978 and the facility was in operation through 1983. Copper and silver sandstone ores from the Triassic Silver Reef Member of the Chinle Formation were

processed via acid heap leach operations. 5M, Inc. had proposed a uranium and vanadium recovery operation in addition to the copper and silver but the necessary permits from the Nuclear Regulatory Commission were never obtained and the processes never came into operation.

The Utah Division of Oil, Gas and Mining has been regulating activities at the site since operations commenced in 1978. 5M's compliance with DOGM has not always been satisfactory and DOGM is currently seeking a \$46,000 reclamation surety bond from 5M. DOGM is conducting a hazard assessment of open mine shafts and adits with a \$55,000 forfeited bond from Kerley Industries, a company which once had prospects of a joint venture with 5M, Inc. 5M has expressed intentions to resume operations at the site should the price of silver become sufficiently high.

A developer with prospective properties south of the site has alleged that constituents from the site may have migrated to the groundwater and contaminated his well located less than 1/4 mile downgradient of the site. He intends to use this well as a public supply for culinary water for a planned 90 family subdivision to be located immediately south of the site. Water from this well is currently used for domestic supply for approximately 11 residences.

2.3 PREVIOUS WORK

Water samples taken by Utah Department of Health and 5M representatives on November 21, 1986 from the collection pond and overflow pond and analyzed for metals show detectable concentrations for 10 constituents. These constituents include: Barium, 2.0 mg/L; Cadmium, 1.06 mg/L; Iron, 180 mg/L; Manganese, 126 mg/L; Chloride, 975 mg/L; Sulfate, 220,000 mg/L; Copper, 222 mg/L; Mercury, 0.374 mg/L; Silver, 8.8 mg/L; and Zinc, 109 mg/L.

A Preliminary Assessment conducted by the UBSHW indicated a potential for contamination of soils, ground water and surface water and assigned the site a medium priority for further site investigation activities.

3.0 FIELD ACTIVITIES

Sampling commenced on July 3l, 1990 and continued for 2 days. The weather was hot and dry with highs of about 105 degrees Farenheit and winds from the south at about 10 to 15 miles per hour. Coordination with the contract laboratory, landowners and local health authorities was made by the Project Manager prior to going on-site. Provisions for site access were arranged on July 31, and the landowner and well owner were notified of their right to obtain split-samples, which they refused. Signed Consent for Access to Property forms are included as Attachment A.

3.1 SAMPLE COLLECTION

Four soil, 6 sediment, 5 surface water and 2 ground water samples were collected. Table 1 summarizes the sample locations and briefly describes the sampled material. Figure 2 shows the locations of all samples. Sampling was conducted in accordance with methods outlined in the UBERR CERCLA Quality Assurance Project Plan (QAPP) of November, 1989. An adequate quantity of previously decontaminated sampling equipment was supplied in order to avoid the need for field decontamination.

Because of the possibility that uranium ores may have been placed in the leach pad, the entire site was screened for radioactive emissions on December 14, 1989 by representatives from the Utah Bureau of Radiation Control (BRC). Memos describing the site visit for radioactive screening are included as Attachment B.

Samples obtained from all media were sent to CHEMTECH Laboratory for analysis of total metals. Duplicates of all samples were sent to the Utah State Health Laboratory for analysis of gross alpha and gross beta radiation, and sulfide.

Photographs were taken throughout the sampling event to help document the sample locations and the sampling methods. These photographs are included in Attachment C.

3.1.1 GROUND WATER

An existing well located approximately 300 feet south of the site, and presumably downgradient, was sampled to determine whether this water is contaminated from constituents originating on-site. Well construction information, water level data and a geologic log of the drill hole was obtained from the well owner on July 30, 1990. This information is presented in Attachment D. The minimum purge volume of 1723 gallons, corresponding to 3 well casing volumes of water, was determined prior to sampling. Mr. LaVarr Webb, representative for the well owner, accompanied us to the site and turned on the pump, which was operated for a period of 60 minutes prior to sample collection. Mr. Webb indicated that the pump yielded approximately 85 gallons per minute. Purge water was collected in a large storage tank located on a hill about a mile south of the site.

Ground water sample LS-GW-01 was obtained from a spigot located directly atop the well casing. Approximately 9 well casing volumes of water were purged prior to sample collection to insure that the water collected for the sample was representative of that in the aquifer and to reduce any influence that the casing and pump may have on the chemical quality. Measurements of the pH, temperature, and specific conductivity were taken immediately prior to sampling and are listed in Table 2. It is not known whether these field parameters had stabilized. The ground water sample for metals analysis was filtered in the field with a 0.45 micron filter membrane and preserved with nitric acid to a pH of less than 2.

Quality assurance sample LS-GW-02, a trip blank, was collected from a container of deionized water immediately following the collection of the ground water sample.

3.1.2 SURFACE WATER AND SEDIMENT

Runoff at the site is ponded in either the acidic water collection pond at the south end of the leach pad or the overflow reservoir. Both of these ponds are underlain with an asphalt and bentonite containment system. Immediately south of the mill area is an unlined secondary impoundment. Farther down-drainage is a stockwatering pond. A canal originating in Leeds Creek about 2 miles north runs along the east side of the site and feeds this pond which is currently used for irrigation.

The drainage area upstream from the site encompasses less than one square mile and the topography suggests that the drainage basin downstream from the site may be closed. Thus, most of the runoff in this drainage is ponded on or near the site and only during the most torrential precipitation events would potentially contaminated surface waters have a possibility of migrating out of the basin.

Surface water samples were collected directly into appropriate containers by submersing the container into the water. Temperature, pH and specific conductivity were measured in the field at all surface water sample locations. The results are presented in Table 3.

Sediments were collected either by scooping the bottom material directly into the appropriate containers, or by collecting the material with a stainless steel spoon and transferring it into the appropriate container. The sediment samples were collected at all surface water sample locations after the surface water samples were procured.

A description of the sample locations follows:

Samples LS-SW-01 and LS-SE-01 were collected from the asphalt lined collection pond. The water had a lime-green viscous "syrupy" appearance with very small prismatic crystals in suspension. A green crystalline crust was present on the surface of the water and gray-brown sediments covered the bottom and outer fringes of the pond. The surface water sample was collected in double volume to provide for an internal laboratory quality assurance check. The sediment sample was a composite of the green crystalline crust, the gray-brown outer fringe and the underwater sediments.

Samples LS-SW-02, LS-SE-02, LS-SW-04 and LS-SE-04 were collected in duplicate from the south side of the asphalt lined overflow pond. The water was clear and approximately 6 to 8 inches deep. Two partially full and 1 empty 55 gallon drums were present near the bottom of the pond. The sediments were very-fine-grained with a red-brown layer at the surface, a light-green layer from 1 to 1 1/2 inch, and dark-brown below.

Sample LS-SE-03 was collected at the lowest part of the northern portion of the secondary impoundment. No surface water was present in the secondary impoundment at the time of sampling. The sediment consisted of a red-brown sandy silt with an alkali surface and was slightly moist below 1 inch. The sample was collected at a depth of 1 to 3 inches. Vegetation was very sparse within the impoundment as compared to the off-site vegetated ground.

Samples LS-SW-05 and LS-SE-05 were collected downstream of the site and the secondary impoundment from a ditch which flows along the east and south borders of the site and empties into the stockwater pond. Water in the ditch is apparently diverted from Leeds Creek, which is located to the north of the site. Flow in the ditch is intermittent, depending on whether the diversion gates are open. The water was clear and the banks of the ditch were well vegetated.

Samples LS-SW-06 and LS-SE-06 were collected from the ditch where it flows on top of a hill to the northeast of the site. The water was clear and the banks of the ditch were well vegetated. These samples will be used as background samples.

3.1.4 SOIL

Soil samples were collected with a stainless steel spoon at or near the ground surface and placed directly into the appropriate containers listed in Table 3. Two of the four soil samples were collected from the surface of the leach pad. One was collected from the ore stockpile and one background sample was taken off-site to the north for use as background. Sample descriptions follow:

Sample LS-SO-01 was collected about 250 feet north of the ore stockpile and the north end of the site to determine background concentrations of potential contaminants. The sample was collected at a depth of 1 to 3 inches and consisted of a red-brown pebbly silt from 0 to 2 inches underlain by green-gray silty clay. Buff to white sandstone bedrock was present in the vicinity of the sample location.

Sample LS-SO-02 was collected at the surface from the east side of the ore stockpile and consisted of light-gray-brown fine sand and silt.

Sample LS-SO-03 was collected at a depth of 0 to 3 inches from the northeast corner of the leach pad. Gray sand and pebbles covered the surface and graded to a purple at a 1 inch depth and red-brown to yellow-brown from 1 to 3 inches.

Sample LS-SO-04 was collected from the south end of the leach pad at a depth of 1 to 3 inches. The material was brown silty sand with minor white alkali crust.

3.2 QUALITY CONTROL

Samples were handled and preserved as per UBERR QAPP of November, 1989, QA/QC criteria. All samples for metals analysis were cooled with ice to 4 degrees Celsius. Water samples for metals analysis were preserved with nitric acid to a pH less than 2. Radiation samples were not preserved.

3.2.1 SAMPLE CONTAINERS

Only certified CLP sample containers were used. The appropriate sample containers for each specific media and respective analyses are listed in Table 4. The containers were provided by I-Chem Research and Eagle-Picher.

3.2.2 BACKGROUND SAMPLES

Three background samples were collected. Sample LS-SO-01 is a background soil sample collected from the north portion of the site. Sediment and surface water samples, LS-SE-06 and LS-SW-06, were collected from the ditch, upstream and northeast of the site.

3.2.3 INSTRUMENT CALIBRATION

All instuments were calibrated according to manufacturers instructions at the start of sampling and periodically through the sampling event. Field monitoring and analytical equipment consisted of a conductivity meter and a pH/temperature meter.

3.2.4 QA/QC SAMPLES

Trip Blank - Sample LS-GW-02. A carbon-filtered deionized water sample was prepared immediately after collecting the first sample, LS-GW-01, which traveled with the other samples and was treated and analyzed as a normal ground water sample. This sample will assess whether the sample containers, preservatives or field conditions are adding to the contamination levels of all samples.

Duplicates - Samples LS-SW-04 and LS-SE-04. Two duplicate samples were made as similar as possible to the originals, LS-SW-02 and LS-SE-02, by systematically alternating the containers during sample collection. These samples will provide an external laboratory QA check.

Double Volume Inorganic - Sample LS-SW-01. One double volume surface water sample for metals analysis was collected for the CLP contract lab internal QA procedures.

3.3 DOCUMENTATION

Documentation procedures included the completion of all CLP forms and tags for RAS inorganic analyses, and State Health Laboratory forms and tags for radiation and sulfide analyses. Strict Chain of Custody was maintained and Chain of Custody forms were filled out to accompany each shipment. These forms are included in Attachment E. Samples for metals analysis were shipped on August 2, 1990 by Airborne Express to CHEMTECH Consulting Group laboratory. Samples for radiation analysis were hand delivered to the Utah State Health Laboratory on August 2, 1990.

4.0 FIELD OBSERVATIONS

In addition to the sampling described above, efforts were made to characterize the potential human and environmental receptors. For the ground water pathway, the maximally exposed individual (MEI) is located less than 1/4 mile to the south. This well serves 11 households with a total population of 69 persons. The MEI for the air pathway is a private residence located approximately 1/4 mile to the south. The populations within each of the 1/4, 1/2, 1, 2, 3, and 4 mile target distance limits will be determined prior to the drafting of an Analytical Results Report. No restrictions to access existed at the time of sampling this site, and evidence of observed use, such as off-road-vehicle tracks and vandalism of the structures, was apparent on-site.

A visual inspection of the surface water pathway did not reveal any apparent outlet for overland flow from the site. Numerous man-made "levees" cross the natural drainage basin in many areas and appear to confine runoff to within 1000 feet of the site, and well upstream of any potential human or environmental targets. However, an overland flow pathway was present for materials to migrate from the leach pad to the local, adjacent basin and into the ditch which feeds the stockwater pond. Sediments showing flow characteristics, and apparently derived from the leach pad, were present along this flow route.

5.0 REFERENCES

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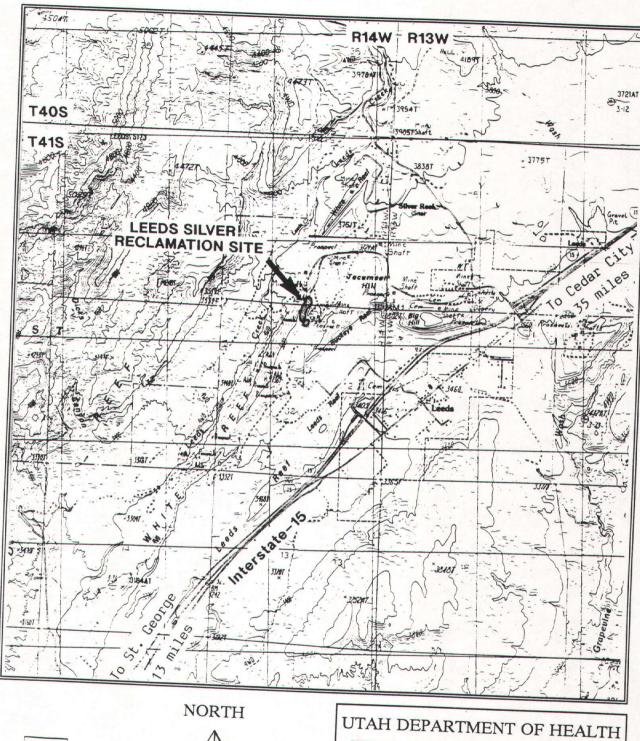
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Webb, La Varr, Hidden Valley Water Users Association. 1990. Personal Communication.







BUREAU OF ENVIRONMENTAL RESPONSE AND REMEDIATION

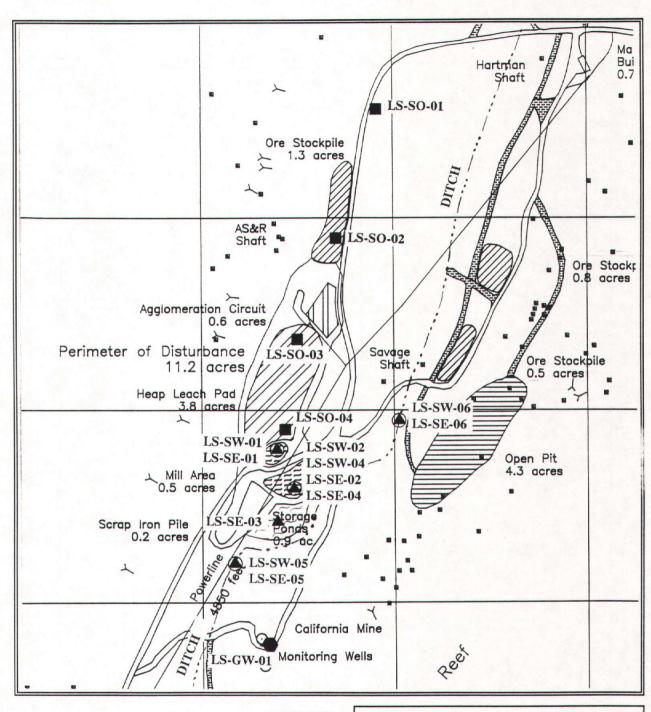
Figure 1

SITE LOCATION

Leeds Silver Reclamation Site Washington County, Utah

Ву	Date	Scale	
JLK	11/05/90	approx. 1:36,000	

USGS Topo. Base, Hurricane, Harrisburg Junction, Signal Peak, and Pintura Quads. 7.5 Min. Series.





Soil Sample

▲ = Sediment Sample

Surface Water Sample

= Ground Water Sample



UTAH DEPARTMENT OF HEALTH

BUREAU OF ENVIRONMENTAL RESPONSE AND REMEDIATION

Figure 2

SAMPLE LOCATION

Leeds Silver Reclamation Site Washington County, Utah

By Date Scale JLK 11/05/90 1:6000

Source: Utah Division of Oil, Gas and Mining, 5M, Inc. File

Table 1 SAMPLE SUMMARY

	Sample #	Location	<u>Description</u>
	LS-SO-01	North portion of	Red-brown pebbly-silt underlain by green-gray silty-
	LS-SO-02	site - Background Ore stockpile	clay. Light-gray-brown fine-sand and silt.
	LS-SO-03	Northeast tailings	Gray sand and pebbles grading to purple underlain by
	LS-SO-04	pile South tailings pile	red-brown to yellow-brown with minor green. Brown silty-sand with minor white alkali crust.
(LS-SE-01	Collection pond	Green crystalline material and gray-brown mud.
	LS-SE-02	Overflow pond	Brown to red mud with a light-green layer underlain by dark-brown mud.
	LS-SE-03	Secondary impoundment	Red-brown sandy-silt with white alkali surface.
	LS-SE-04	Overflow pond - Duplicate	Same as LS-SE-02
	LS-SE-05	Downstream in ditch	
	LS-SE-06	Upstream in ditch - Background	
	LS-SW-01	Collection pond	Viscous lime-green water with small suspended
	LS-SW-02	Overflow pond	prismatic crystals, approx. 1 inch deep Clear water, 6 to 8 inches deep
	LS-SW-04	Overflow pond - Duplicate	Same as LS-SW-02
	LS-SW-05	Downstream in ditch	Clear water
	LS-SW-06	Upstream in ditch - Background	Clear water
	LS-GW-01	Existing well southeast of site	Clear water
	LS-GW-02	Trip Blank	Carbon-filtered deionized water

Table 2 FIELD MEASUREMENTS FOR WATER SAMPLES

LS-GW-01 Ex	disting well, sampled 7/31	/90	
Time	Temperature (degrees C)	pН	Specific Conductivity (micro mhos)
11:05	17.7	7.37	1030
LS-SW-01 Co	llectionpond, sampled 7	/31/90	
Time	Temperature (degrees C)	pН	Specific Conductivity (micro mhos)
14:00	36.3	2.63	185,700
LS-SW-02 Ove	erflowpond, sampled 7/3	31/90	
<u>Time</u>	Temperature (degrees C)	pН	Specific Conductivity (micro mhos)
14:30	32.8	7.43	13,580
LS-SW-05 Dov	wnstream ditch, sampled	8/01/90	
Time	Temperature (degrees C)	<u>pH</u>	Specific Conductivity (micro mhos)
08:00	19.9	8.24	300
LS-SW-06 Ups	streamditch, sampled 8/	01/90	
<u>Time</u>	Temperature (degrees C)	<u>pH</u>	Specific Conductivity (micro mhos)
08:30	18.7	8.53	220

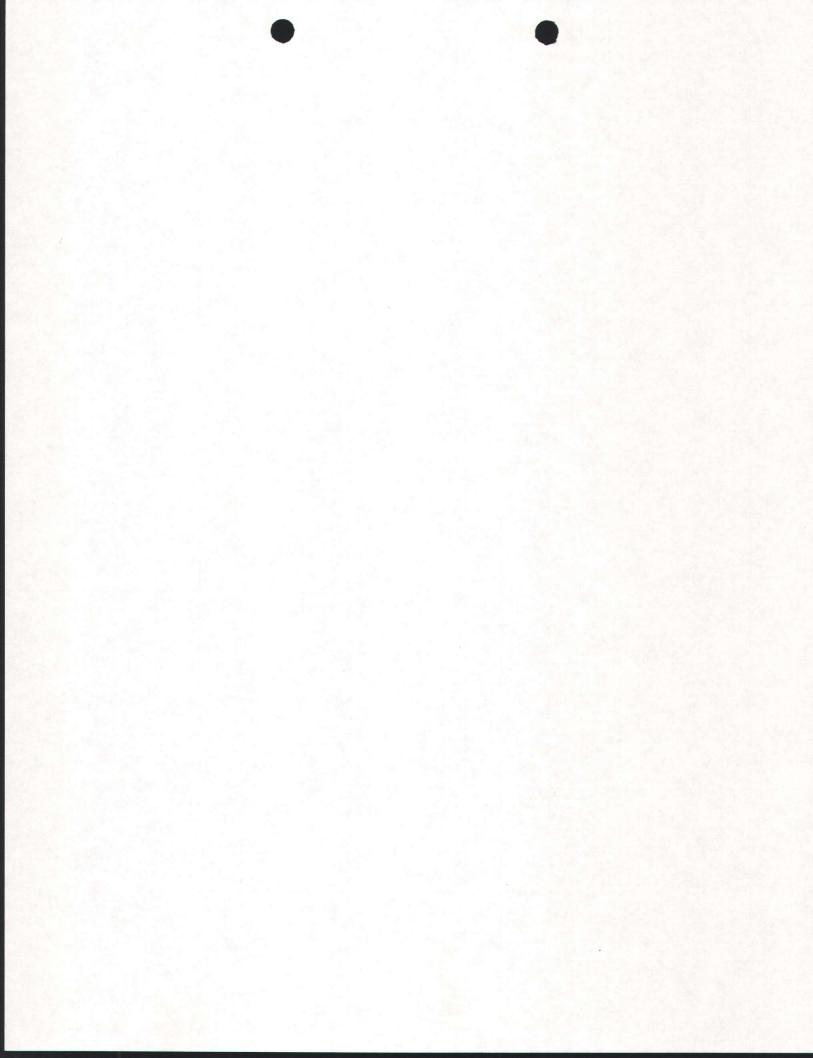


TABLE 3

APPROPRIATE SAMPLE CONTAINERS FOR SPECIFIC SAMPLING MEDIA AND ANALYTICAL PARAMETERS

1. Surface water or ground water samples

Total metals --

1 one liter plastic bottle

Radiation --

1 eight oz. glass bottle per sample

2. Solids (soil, sediment, etc.)

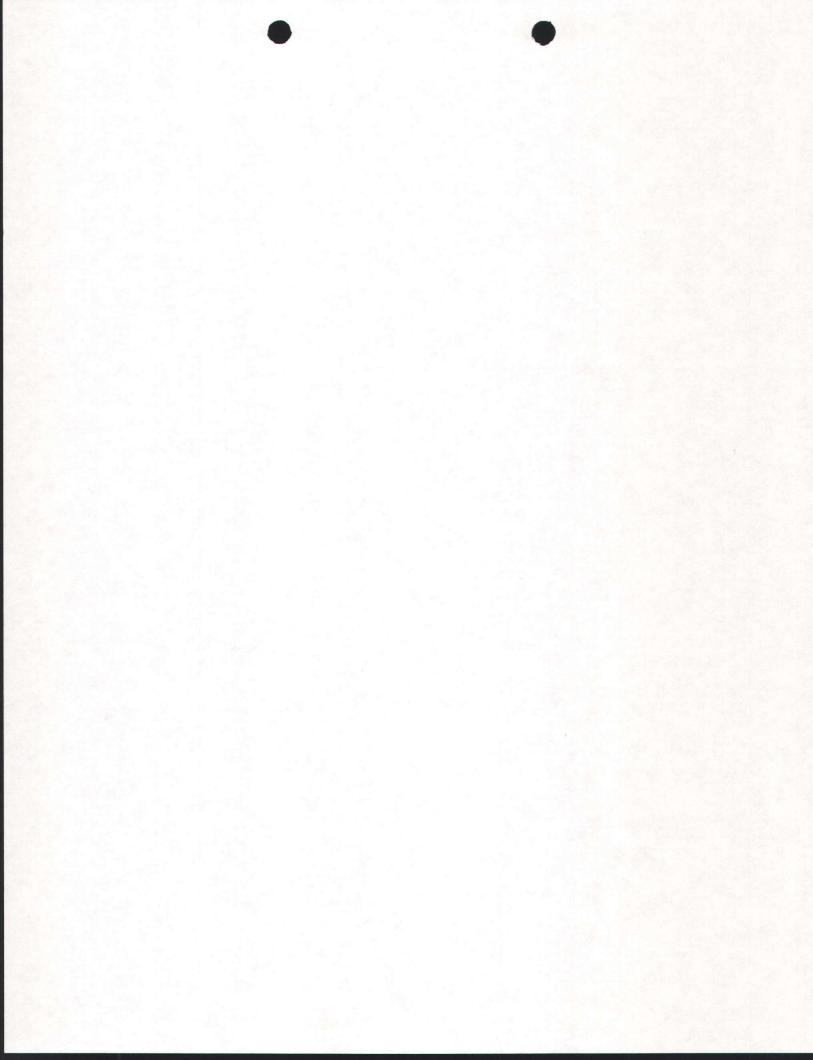
Total Metals --

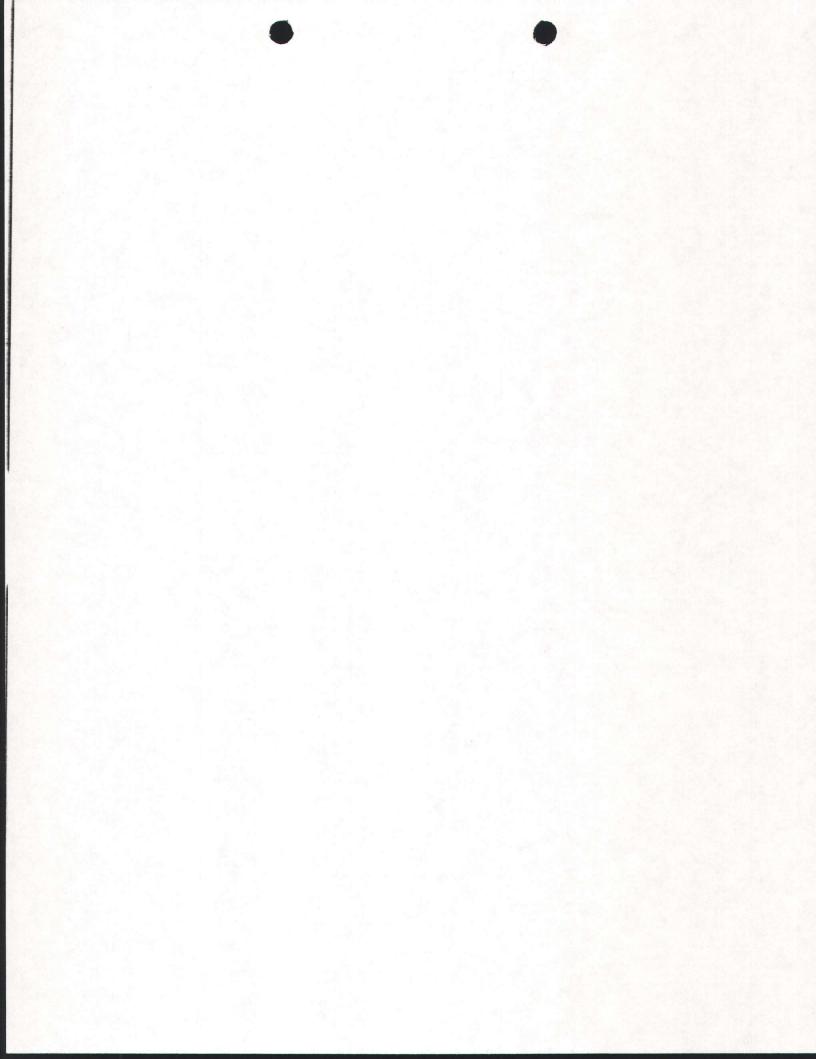
1 eight oz. glass bottle per sample

Radiation --

1 eight oz. glass bottle per sample

ATTACHMENT A
Signed Consent for
Access to Property Forms





Utah Bureau of Solid & Hazardous Waste CERCLA Branch

CONSENT FOR ACCESS TO PROPERTY

Name, Title Don Larkin, Hidden Valley Water Users Assoc.
Address or Coordinates of Property Underground Water Well located in Sec. 12, T415, K14W
I consent to officers, employees, and authorized representatives of the Utah Bureau of Solid & Hazardous Waste (BSHW) entering and having access to my property for the following purposes:
1. The taking of ground water samples;
2. Other such actions related to the taking of these samples
as may be necessary.
I realize that these actions by BSHW are undertaken pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. c9601-9675.
This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.
(Signature) July 30, 1990

Utah Bureau of Solid & Hazardous Waste CERCLA Branch

CONSENT FOR ACCESS TO PROPERTY

Name, Title Verry Chazier, 5M Inc.
Address or Coordinates of Property Leeds Silver Reclamation Site (Silver Rect) N/4 Corner, Section 12, T415, R141
N/4 Corner, Section 12, T415, R141

I consent to officers, employees, and authorized representatives of the Utah Bureau of Solid & Hazardous Waste (BSHW) entering and having access to my property for the following purposes:

- 1. The taking of 6 soil, 4 sediment, and 4 surface water samples;
- 2. Other such actions related to the taking of these samples
 as may be necessary.

I realize that these actions by BSHW are undertaken pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. c9601-9675.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

Sy Sun Hay (Signature)

7/31/90 (Date)



5M, INC., P.O. BOX 752, HURRICANE, UTAH 84737 (801) 635-4473

LIABILITY RELEASE

For Injury to Person and/or Damage to Equipment

The undersigned hereby agrees not to hold 5M., Inc., responsible for any injury to person and/or damages to property or equipment sustained while traversing patented or unpatented mining properties belonging to 5M, Inc., in the Leeds/Silver Reef mining area.

Company Represented

(File in duplicate)

ATTACHMENT B Site Visit Memos Radiation Screening

MEMORANDUM

DEC 3 3 1989

TO::

Leeds Silver Reclamation Site file

(UTD No. 981550619)

FROM:

JLK Jason Knowlton, Project Manager

THROUGH: Brad T. Johnson, Technical Services Manager

Bureau of Solid & Hazardous Waste

SUBJECT:

Site visit, December 14, 1989

John Hultquist, Utah Bureau of Radiation Control (BRC), and I inspected the Leeds Silver Reclamation Site on December 14, 1989. The primary purpose of the visit was to determine whether radioactive emissions from the site were at levels significantly above background or which could present a risk to human health or the environment. Subsidiary purposes of this visit were to assess the potential for migration of contaminants off-site, especially with regard to the surface water pathway, and to better familiarize myself with the site and with the problems associated with the site.

At 9:00 am, I met with Jerry Glazier of 5M, Inc. at their office in the basement of the Zion's Bank Building (279 South State) in Hurricane, Utah to obtain access to the site. Conversation with Mr. Glazier indicated that a conflict exists between 5M, Inc. and a local land developer, LaVar Webb, who wishes to develop land immediately southeast of the 5M Silver Reef property for residential use. Mr. Webb is concerned that materials from the 5M property may have contaminated the groundwater in the area. Mr. Glazier claims that the current water table is the result of recent water diversion activities and that in the past, the water table was at depths greater than 300 feet below land surface. He claims that no pumping of water was done in conjunction with the historic mining operations in the shafts and tunnels extending to these depths. Water in a canal to the north of the site is diverted down the California Shaft near the site. Mr. Glazier alleges the the water for LaVar Webb's drinking water supply is being pumped at depth from the lateral workings of the California Mine and not from a bedrock aquifer.

I arrived at Leeds, Utah at 10:00 am accompanied by Mr. Glazier, and met with John Hultquist. Mr. Glazier unlocked and opened the gate providing us access to the site from the north. After describing the site briefly, Mr. Glazier left at about 11:00 am. The weather was clear and cool with moderate, gusty winds.

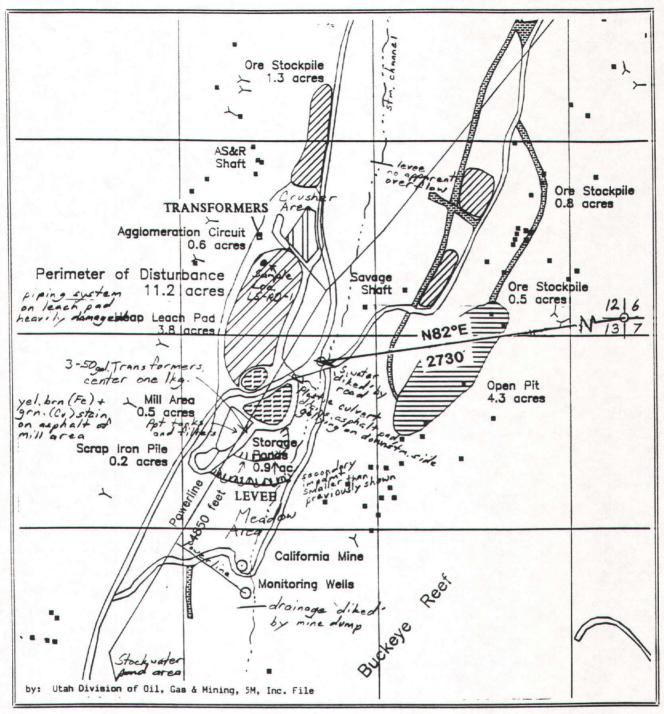
John Hultquist scanned the site with a portable radiation detector. No areas were located with radiation levels which were substantially above background or which presented a

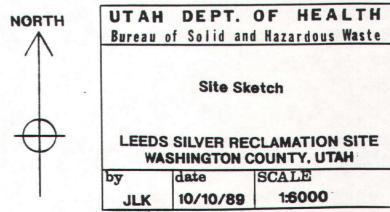
significant hazard. The highest reading obtained was approximately twice the background level and was located on top of the leach pad near the north end of the pad. A soil sample (#LS-RD-1) was taken from this location and will be analyzed for radioactive emissions by BRC. John Hultquist will send BSHW a memo summarizing the results of the radiation survey.

Observations were made of the drainage basin with regard to topography and the potential for contaminants to migrate off-site via the surface water pathway. The valley bottom trends roughly north-south along the east side of the site. Mine tailings and levees truncate the valley floor in several locations near the site forming impoundments which appear sufficient to contain all overland flow originating on-site and upstream to the site and confine it to within a quarter-mile downstream. Material from the leach pad appears to have overtopped a berm on the east side of the pad and may be migrating into a valley meadow adjacent to and southeast of the overflow pond. Both the overflow and collection ponds were nearly dry. No evidence was apparent which would indicate any past overtopping of these ponds. No drainage structures were apparent connecting the overflow pond to the secondary impoundment. Instead, it appears that the secondary impoundment was designed to capture runoff from the mill area.

Other miscellaneous observations made while onsite include the following: Four houses were visible to the north about a half mile away. Five houses are located about a half-mile southeast of the site. The 72 gallon transformers to the north showed no apparent leakage. Three 50 gallon transformers, one of which appeared to be leaking, were located in the mill area. Green copper precipitate was present in the bottom of some large rectangular 'tubs' in the mill area and in spills on the asphalt of the mill area. The site was strewn with debris and a large amount of vandalism was apparent. These and other observations are noted on the attached site sketch. At 1:00 pm, we left the site and locked the gate behind us.

Figure 2







DEPARTMENT OF HEALTH DIVISION OF ENVIRONMENTAL HEALTH

Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema

288 North 1460 West P.O. Box 16690 Salt Lake City, Utah 84116-0690 (801) 538-6121

Memorandum

To:

Jason L. Knowlton

Bureau of Solid & Hazardous Waste

From:

John Hultquist

Bureau of Radiation Control

M

Date:

December 21, 1989

Subject:

Leeds Silver Reclamation Site

On December 14, 1989, I conducted a radiological survey of the Leeds Silver Reclamation Site. A walk-over gamma survey was conducted using a Ludlum 12 S Micro R Meter (S/N 4298). Slightly elevated measurements were observed on the north end of the heap leach pad. The measurements were 35 to 40 micro-rad/hr at approximately one meter above ground level. The measurements were observed approximately 100 feet south from the north end of the leach pad. The area is approximately 8 feet by 25 feet, running in a west-to-east direction, becoming smaller in size as one moves eastward.

All other observed measurements were between 14-20 micro-rad/hr. A one-mile remote measurement was taken to determine a background level. The observed measurement was 15 micro-rad/hr one meter above ground level.

A surface grab sample was taken from the heap leach pad, 40 feet from the west end and 100 feet south of the north end. The sample will be analyzed for Ra-226 and U-238 concentrations.

In summary, the gamma emission coming from the heap leach pad does not warrant concern at this time. If results from the soil analyses indicate high concentrations, then additional surveys will be conducted.

If you have any further questions, please contact me at 538-6734.



Norman H. Bangerter Suzanne Dandov, M.D., M.P.H. Executive Director Kenneth L. Alkema Director

DEPARTMENT OF HEALTH DIVISION OF ENVIRONMENTAL HEALTH

288 North 1460 West PO Box 16690 Salt Lake City, Utah 84116-0690 (801) 538-6121

Memorandum

To:

Jason L. Knowlton

Bureau of Solid & Hazardous Waste

From:

John Hultquist

Bureau of Radiation Control

Date:

April 6, 1990

Subject:

Leeds Silver Reclamation Site

Enclosed are the results of the soil sample taken from the heap leach pad. The concentrations reported do not exceed regulated quantities. You may keep the results; I have made a copy for my records.

If you have any questions regarding this matter, please call me at 538-6734.

90/03/22 14:50



LEEDS SILVER RECLAMATION SITE: LEACH PAD BUREAU OF RAD CONTROL

538-6734

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: LEEDS SILVER RECLAMATION SITE: LEACH PAD

Site ID:

Cost Code: Lab Number: 8908466

342

Type:

Source: 00

50

Sample Date: 89/12/14 Time: 12:20

Tot. Cations:

Tot. Anions: Grand Total:

me/l Anions:

me/l Cations:

Date of Review and QA Validation Inorganic Review: 90/03/22

Organic Review:

Radiochemistry Review: 90/03/22

Microbiology Review:

Laboratory Analyses

Uranium Beta gross 98.0 pCi/g 6 pCi/q

+/-4.0 Alpha, grs +/-1.0 226 Radium

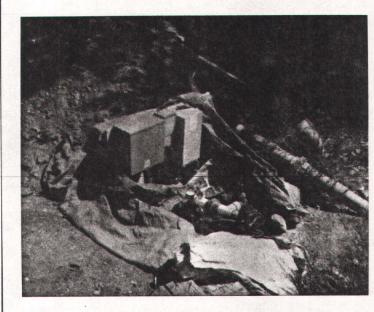
6 pCi/g 8 pCi/g

+/-1 +/-1 ATTACHMENT C Site Photographs

#1 Leeds Silver Reclamation Site 7/31/90 Monitoring equipment for water samples. Conductivity meter, pH and temperature meter, and filter apparatus.

#2 Leeds Silver Reclamation Site 7/31/90 Wellhead at LS-GW-01. Water is pumped to a supply tank located about 1 mile south.

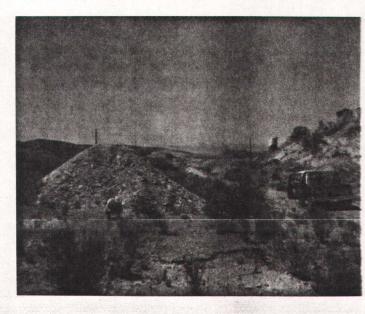




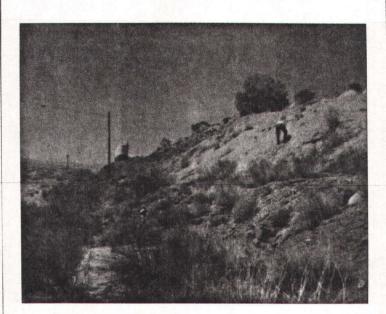
#3 Leeds Silver Reclamation Site 7/31/90 View northeast toward LS-SO-01. Sample is being collected with a stainless steel spoon.

#4 Leeds Silver Reclamation Site 7/31/90 View south toward LS-SO-01. Small pile in background is outcrop. Note ore stockpile to far right.

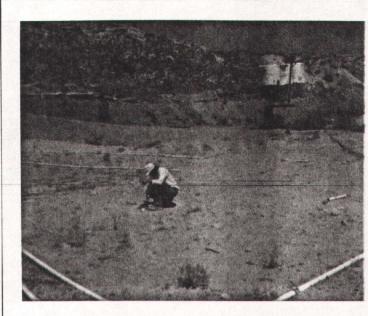




#5 Leeds Silver Reclamation Site 7/31/90 View south of southwest toward LS-SO-02 located on side of ore stockpile.



#6 Leeds Silver Reclamation Site 7/31/90 View northwest toward LS-SO-03 located on north portion of tailings pile.



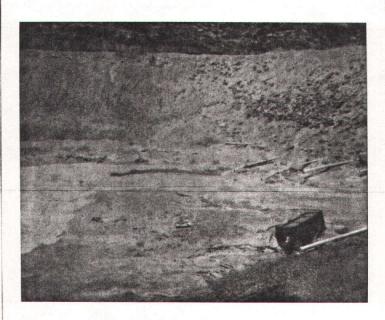
#7 Leeds Silver Reclamation Site 7/31/90 Red-brown to yellow-brown soils immediately below gray surface soils at LS-SO-03.



#8 Leeds Silver Reclamation Site 7/31/90 View south of southwest toward LS-SO-04, located near south end of tailings pile.



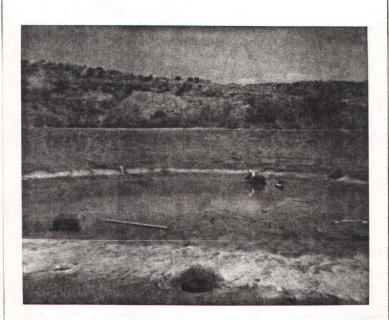
#9 Leeds Silver Reclamation Site 7/31/90 View west of northwest toward the collection pond and the location of LS-SW-01.



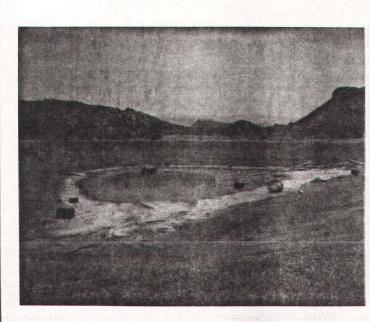
#10 Leeds Silver Reclamation Site 7/31/90 View northwest toward the collection pond. Sample LS-SE-01 is being collected.



#11 Leeds Silver Reclamation Site 7/31/90 View southeast toward the overflow pond and LS-SW-02.



#12 Leeds Silver Reclamation Site 7/31/90 View south toward the overflow pond. Two of the drums in the photo are partially full.



#13 Leeds Silver Reclamation Site 7/31/90 View south toward the secondary impoundment. Sample LS-SE-03 was collected just beyond the trees in the middle of the photo.

#14 Leeds Silver Reclamation Site 7/31/90 Transformers located in the south portion of the site. Note oily stains around base of center transformer.





#15 Leeds Silver Reclamation Site 8/01/90 View north to ditch and LS-SW-05. Hill in background is levee for secondary impoundment.

#16 Leeds Silver Reclamation Site 8/01/90 Ditch and location of LS-SE-05.





#17 Leeds Silver Reclamation Site 8/01/90 View north of northeast toward LS-SW-06.

#18 Leeds Silver Reclamation Site 8/01/90 Sample collection at LS-SE-06.





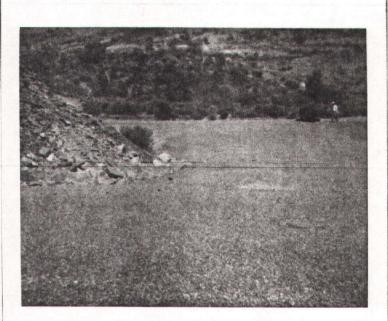
#19 Leeds Silver Reclamation Site 8/01/90 View north along the east side of the tailings pile. Note sediments in road.

#20 Leeds Silver Reclamation Site 8/01/90 View south along the east side of the tailings pile. Flow characteristics are apparent in the sediments on the road.

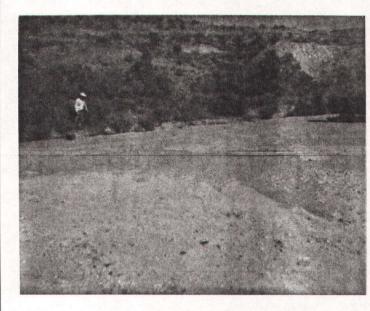




#21 Leeds Silver Reclamation Site 8/01/90 View east from the east edge of the tailings pile and the collection pond. The on-site surface water overland flow path is east down the center of the photo.



#22 Leeds Silver Reclamation Site 8/01/90 View east of southeast. Note the flow characteristics in the sediments atop the asphalt.



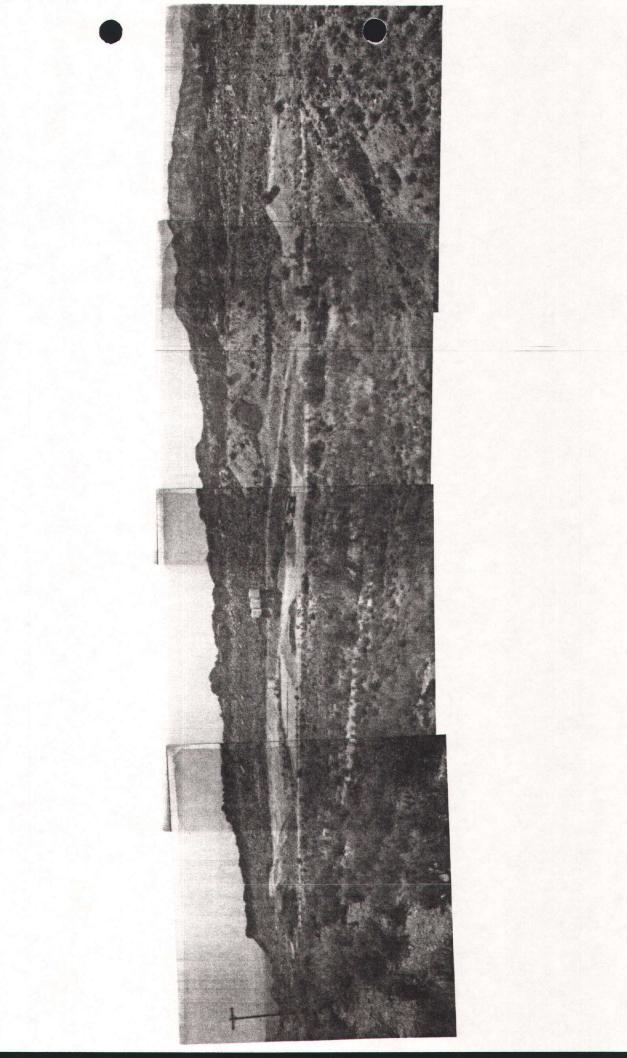
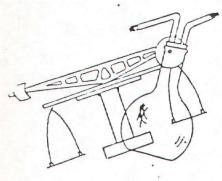


Photo-mosaic of the Leeds Silver Reclamation Site from the Northeast





Ford Chemical LABORATORY, INC.

Bacteriological and Chemical Analysis

40 WEST LOUISE AVENUE SALT LAKE CITY, UTAH 84115 • PHONE 485-5761

Date: October 25, 1974

Name Color Country Development

Address 575 East 700 South

St. George, Utah

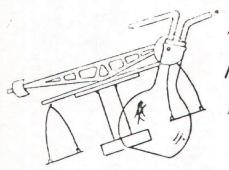
ATTENTION: Donald Larkin

Sample Well water from Leeds, Utah dated 10-16-74 received on

October 17, 1974:

[urbidity	7.80 JTU	Fluoride as F	<u>0,65</u> mg/1
Conductivity	1,002umhos/cm	Total Hardness as CaCC	$\frac{392.0}{mg}$
рН	8.10	Iron (Total) as Fe	<u>0.15</u> mg/1
Total Dissolved Solids at 180° C.	692.0 mg/1	Iron (Filtered) as Fe Lead as Pb	$\frac{0.10 mg/1}{1.01 mg/1}$
Alkalinity as CaCO ₃	244.0 mg/1	Magnesium as Mg	35.52 mg/1
Aluminum as Al	≤ 0.01 mg/1	Manganese as Mn	< 0.01 mg/1
Arsenic as As	≤ 0.01 mg/1	Mercury as Hg	<0.001 mg/1
Bicarbonate as HCO ₃	283.60 mg/1	Nitrate as NO ₃ -N	mg/1
Barium as Ba	≤ 0.01 mg/1	Phosphate as PO ₄	0.24 mg/1
Boron as B	≤ 0.01 mg/1	Potassium as K	1.46 mg/1
Cadmium as Cd	≤ 0.001 mg/1	Selenium as Se	<u> </u>
Calcium as Ca	97.60 mg/1	Silica as SiO₂	<u>0.39</u> mg/1
Carbonate as COs	≤ 0.01 mg/1	Silver as Ag	< 0.001 mg/1
Chloride as Cl	10.0 mg/1	Sulfate as SO.	220.0 mg/1
Chromium as Cr (Hex)	≤ 0.01 mg/1	Sodium as Na	46.0 mg/1
Cyanide as Cn	< 0.01 mg/1	Zinc as Zn	<u>0.02</u> mg/1
Copper as Cu	mg/1		

Ford Chemical Laboratory, Inc.



Total Chemical LABORATORY, INC.

Bacteriological and Chemical Analysis

40 WEST LOUISE AVENUE SALT LAKE CITY, UTAH 84115

PHONE 466-8761

DÁTE: 08/02/89
CERTIFICATE OF ANALYSIS

HIDDEN VALLEY WATER % LAVAR WEBB 425 E. 900 SO. ST. GEORGE, UT 84770

89-008597

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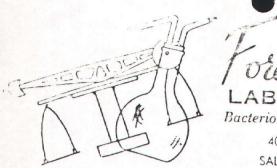
3.53 23.24 23.24

SAMPLE: WATER SAMPLE RECEIVED 7-25-89 FOR COMPLETE ANALYSIS STARTING AT 1:30 P.M.

Alkalinity,CaCO3 mg/1 SM4O3
Arsenic, As ma/1 SM304
Bicarbonate, HCO3 ma/1 SM4O3
Cadmium, Cd ms/1 SM304
Carbonate as CO3 mg/1 SM403
Chromium Cr.Hex mg/1 EFA210
Conductivity umhos/cm EPA 1
Fluoride, F mg/l SM413B
Hydroxide as OH mg/1 SM 403
Iron, Fe (Tot) ma/1 SM303A
Magnesium, Mg mg/1 SM303A
Mercury, Ha ma/1 SM320A
Nitrate, NO3-N mg/l SM418C
Phosphate PO4-P (O)EPA 365.
Selenium, Se ma/l SM30,4

4	
247	Ammonia, NH3-N mg/l SM4170
	Barium, Ba mg/1 SM303C
301 Down	Boron as B mg/1 SM 404A
<.001	Calcium, Ca ms/1 SM303A
<.10 VP	Chloride, Cl mg/l SM407A
<. 004 ³ °°°	Chromium,Cr Tot ms/1 EPA218
1,250	Copper, Cu mg/l SM303A
. 26000	Hardness, CaCOS mg/1 EPA 130
<.10	Iron, Fe (Dis) ma/1 SM3034
. 13	Lead, Pb ms/1 SM304
64.10 W	Manganese, Mn mg/1 SM303A
	Nickel, Ni ma/1 SM303A
.03 Deg	
<.04	Potassium, K ms/1 SM303A
<.001 €	Silica SIO2 (DIS) mg/1 SM42

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.



Ford Chemical LABORATORY, INC.

Bacteriological and Chemical Analysis

40 WEST LOUISE AVENUE SALT LAKE CITY, UTAH 84115

PHONE 466-8761

PAGE: 2
CERTIFICATE OF ANALYSIS

Silver, As ms/1 SMSQ4 Sodium, Na mg/1 SM303A 55,00 <.001 up Tot.Dis.Solids mg/1 EPA 160 Sulfate, SO4 mg/1 EPA 375.2 380 826 we Zinc, Zn mg/1 SM303A Turbidity NTU EPA 180.1 .03 .35 PH Units EPA 420.1 7.50

FORD CHEMICAL LABORATORY, INC.



DATE: 08/02/89
CERTIFICATE OF ANALYSIS

87-008597-01

FORD CHEMICAL LABORATORIES

BALANCE SHEET FOR SAMPLE: (1) RESULTS

CATIONS	l\em	meq/1
Calcium, Ca ms/1 SM303A Masnesium, Ms ms/1 SM303A Iron, Fe (Dis) ms/1 SM303A Sodium, Na ms/1 SM303A Potassium, K ms/1 SM303A Ammonia, NH3-N ms/1 SM417G	130.400 64.100 .000 55.000 3.530 .000	6.507 5.272 .000 2.393 .090 .000
ANIONS	mg/l	meq/1
Carbonate as CO3 mg/1 SM403 Bicarbonate, HCO3 mg/1 SM403 Sulfate, SO4 mg/1 EPA 375.2 Chloride, Cl mg/1 SM407A Nitrate, NO3-N mg/1 SM418C Hydroxide as OH mg/1 SM 403	.000 301.000 380.000 43.500 .030 .000	.000 4.936 7.912 1.227 .000

PHONE 466-8761

BALANCE INFORMATION

CATIONS: 14.262
ANIONS: 14.075
TOTAL: 28.337
DIFFERENCE: .187
SIGMA: .006

ATTACHMENT E Documentation

U.S. ENVIRONMENTAL PROTECTION AGENCY Environmental Services Division

CHAIN OF CUSTODY RECORD

999 18TH. STREET DENVER, CO. 80202-2413

Distribution: Original Accompanies Shipment: First Copy to Coordinator Field Files: Second Copy to Representative of Inspected Facility

Split Samples:

8-14605

R8 EPA-014B (4-21-86)

U.S. ENVIRONMENTAL PROTECTION AGENCY Environmental Services Division

CHAIN OF CUSTODY RECORD

999 18TH. STREET DENVER, CO. 80202-2413

		REMARKS	Tag ##	8-15826	8-15827	8-15328	8-15829						Received by: (Signature)		Received by: (Signature)		Signature
/ / /			Sample	MHPZ57	MHP758	MHP 759	MHP 760						Date/Time		Date/Time		pies:
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PROJ. NO.		SAMPLERS: (Signature)	STAT. NO. DATE	45-54-25 81190	0418 SV-35-57	15-5406 81150	15-51 ON 3V 70						Relinquished by: (Signature)	The state of	Relinquished by: (Signature)	Relinquished by: (Signature)	Distribution:

8-14604

R8 EPA-014B (4-21-86)

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INORGANIC TRAFFIC REPORT

SUPERFUND—PA SV NPLD	YPE OF ACTIVITY (CIRCLE ONE) SUPERFUND—PA SP ESI RIFS RD RA EF NPLD O&M OTHER NON-SUPERFUND—PROGRAM						C. 1.	Ce	1150	ECH Liting Com The Street	-	(ENTER IN E	WATER 5. SEDIMENT WATER 6. OIL (SAS)
SITE NAME: Leeds Silver CITY, STATE:		SITE SI								Nit. 1001 = hita - zice	4		LUME REQUIRED FOR MATRIX LICATE AQUEOUS SAMPLE
Leeds, UT	_ מדט	9815	5061	9	SAMI				20	END: 8/1/9	4		IM AND HIGH CONCENTRATION
0 Utai	MPLING BE	COMPA	NY	-						CARRIER:	(5)		REVERSE FOR ADDITIONAL RUCTIONS
SAMPLER: (NAME) Jason Know	Hon				AIRB	ILL 1	NO: _			Aiden	2	11101	noonene
	N 6 7		0		AN	RAS				SPECIAL HANDLING		STATION LOCATION	
CLP	LE DESCRIPTION 1 BOX 1) 3 4 5	TRATION	TOTAL METALS	AIDE	DISSOLVED		ON	GH ILY AS)					(184 minus
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MHP 746	4	1	V									5-50-01	
MHP 747	4	1	V	_							-	5-50-02	
MHP 748	4	1	V		-							5-50-03	
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MHP 750	/	4	V		-		-	-		dbl vol.		5-SW-01	
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MHP 753	5-	4	V	1								5-52-02	
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ATTACHMENT D
Ground Water Well Data

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LaVarr Webb	LaVarr Webb Hidden Valley Water Users
	idden Valley Water Users

3-29-88 SAMPLE NO. K8800164 TIME COLLECTED LaVarr Webb 3-17-88 Well #2 COLLECTION DATE SITE LOCATION COLLECTOR(S)

DATE RES		3-17-88
	DATE	DATE

	ESE	>	T M
T/gm	MANGANESE	MERCUR	SELENIUM T
CATIONS mg/1	.523	. col . OO1 MERCURY	500.
	57	00'	-V
	7.7 pH		
L/gm	42.6 CHLORIDE 8 7.7 PH	FLUORIDE	NITRATE
ANIONS mg/1	42.6	5.283	5 .44

SULFATE	mg/1
6.90	ATIONS

SELENIUM TOTAL

SILVER TOTAL

.005

ZINC TOTAL

V.05

SODIUM

46.36.0

	TOTAL	TOTAL	IVI
mg/1	ARSENIC TOTAL	CADMIUM TOTAL	CHDOM TOTAL
CATIONS	2.001	2	01

CHROM TOTAL	COPPER TOTAL	IRON TOTAL
.01	.037	.07

LEAD TOTAL	BARTUM TOTA
LEAD	BART
.01	-

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\$125.00 TOTAL COST

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NDARDS

Maximum	2 1		Maximum Limit Mg/1	0.05* 1.0* 0.01* 0.05* 0.002* 10* 0.01* 0.05*
Suggested		0/100 ml	Suggested Limit Mg/1	250 1.0 0.01 0.03 0.05 1000 2000 5
Physical Turbidity	JTU for Treated Surface Water JTU for Groundwater Sources (wells, springs, etc.)	Total Coliform	Chemical	Arsenic Barium Cadmium Chloride Chromium Copper Cyanide Fluoride*** Iron Lead Manganese Mercury Nitrate Selenium Silver Sodium Sulfate Total Dissolved Solids Zinc

*Limits set by EPA, National Interim Primary Drinking Water Regulations Federal Register Vol. 40, No. 248, Wednesday; December 24, 1975.

diets. This level does not pertain to normally healthy indivi-**Limit that appears to be safe for those on sodium restricted Maximum Level Milligrams duals as excess sodium is easily elimited from the body. ***Average Yearly Temperature

2.0 1.8 1.6 Per Liter Degrees Fahrenheit 53.7 and below 53.8 to 58.3 58.4 to 63.8 63.9 to 70.6

TOTAL DIS. SOLIDS

428

TURBIDITY

7 80 10

SURFACTANT

.05

PARAMETERS mg/1

GENERAL

*These results may not be used in a court of law without written consent from Southern Utah State Testing Lab.

App. # 4- 6359 (81-675) N. 4260 ft. & W 2660 ft. from the S. E. Gor. of Sec. 12, T413, 2 14W, SLBFM Gx purae 1012 me= red Shale 0-38 2 6 = 142-70)(12 38-60 blue & gray clay - 75 (4)2 1200-142h 60 - 70 ned sand rock (30/231 13) 70 - 90 yellow sandrock 90-100 → [(97667 + 34967)/e3) red + blue sand rock 100-133 = 1723 gallons white sand with + green clay (ore) 133 - 135 gray + white send rock + black soapstone 135 - 145 145-180 180-185 gray sundrock + clay 185 - 190 purple sandy shale 188-195 gray shale 195-200 red Shale Water level 70 ft. 145 ft. of 8 % × 1/6 pipel perferated from 125 ft. to 145 ft; 1/8 holes; size 14 "X5" dynamiled at 135 ft. with 200 lbs. of dynamite 12"hole to 142 ft. 8" hole from 142 ft. to 200 ft.

Boyd Braishaw

MOJ. NO.		PROJECT NAME				/	///	101.
	7	Leeds	Silver Keclamation	NO.			2	187 S
UPLES	UPLERS: ISognature)	Jas	Monther for son from	CON	Tag Numbers:	00,000 624 000 608 CHENIS	Sig Content	PENTS! TOO DE TO
IT. NO.	DATE	TIME	STATION LOCATION	TAINERS		4, -	3470	el dives
15- GW-01	7/31/90	1105	existing well		UT4005		7/7	30 - 202
	2/31 11/2	98#	total ant		4000	THE STATE OF THE S	1 de 1	tetad 3/2/40
57-07	7/31	5411	background	,	4007		1/	X.
20-05		1200	Ore Stockpile	1	4008		1/1/	
50-03	7/31	1215	NE Tailing Pile	/	4009		/ /	6.51
15.	7/31	1230	S Tailing Pile	/	4010		//	11.0
10.00	7/3/	1400	V	1	1104		/	752 . /
47	7/3)	0041	1,	,	2104		1/	11.00
- 57 5W-02	7/31	1430	estlow h	_	6104		/ /	: E112006
20-35	7/31	1430	Alow !	/	4104		//	1911
40-MS	7/3/	1430	Overflow Pand	1	4015		1	3115006
	12/	1430	flow,	/	9104		1/ 1/	
54.03	1-1	1530	Secondary Impdant	1	2104		/ /	• 41
Unquilable	Unquilating by: (Signature)	Mount	Date/Time Received by: (Signature)	Signature	Relinquished by: (Signature)	Signature)	Date/Time	Received by: (Signature)
M	Ih	M	82140 13:04					
Inquishe	Inquished by: (Signature)	nature)	Dater Time Received by: (Signature)	Signeture)	Nellnquiehed by: (Signature)	Signatural	Date/Time	Received by: (Signature)
			1		+			
Witne	Witness : (5/graffure)	(e)nlev	(Signature)	X	A-2.50	(3200		
			70 32 1	- Cloud		1/200		

PROJECT NAME	NWE -			//	///	18/1/
	Silver Reclamation	ÖN			3	liset i
WPLERS: (Sugnature)	Ment ton)		Tag Numbers:	\$09 00L \$09 00L \$112HJ &	529 G	REMARKS TO SO THE MARKS
IT. NO. DATE TIME	STATION LOCATION	TAINERS	TAM	-	1410 1410	el clubs
0080 06/1/8 -57	James Stoam	1 11	810h			9005118
	12 11		4019		7	119
1/8	background		7020		7	1905 120
8/1	background		4021	7	7	127
)					
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(quitengly) : (Signaling)	Date/Time Received by: (Signature	Signature)	Relinquished by: (Signature)	eture)	Date/Time	Received by: (Signeture)
Mally	82/10/24					
inquished by: (Signalure)	. Date/ Ilme Received by: (Signature	Signature)	. Relinquished by: (Signature)	sture)	Date/Time	Received by: (Signature)
Witness :(Signature)	Ostelline Rucelved for Laborate (Signature)	(Signature)	8-290 13.04	Nemerke 7		
		1				

	Sampling Point:_						
ollector: Jason	her Recla			11	County:		Cost Code:
and Report to: Jas							
Idress: 288/				/		reproduc ir	Zip:
TCPC	THPH	BOD	Nut	_Bact	Pest _	THM	RadSpe
800	Cyanide		400		MPN Total	Coliform	s/100 ml
TSS	Phenolic	cs			MPN Fecal	Coliform	s/100 ml
TKN	Sulfide				MF Total	Coliforms	/100 ml
TOC	pH		. 800		MF Fecal	Coliforms	/100 ml
000	Oil & G	rease		- 500 - V	Fecal Str	eptococci	/100 ml
					_Plate Cou	nt - Org.	/m1
			·				
CATIONS		<u> </u>	ANIONS			TOTAL M	ETALS
Ammonia	Lead .	Bic	carbonate	en y sayin	Alu	minum	Lead
Arsenic	Magnesium .	Car	bon Dioxide	е .	Ars	enic	Manganese
Barium	Manganese .	Car	rbonate		Bar	ium	Mercury
Boron	Nickel .	Ch1	loride		Ber	yllium	Molybdenu
	Potassium .	co-	Solids		Cad	mium	Nickel
Cadmium	Selenium .	Flu	uoride	100.0	Chr	omium	Selenium
Cadmium Calcium		11	d		Coh	alt	Silver
Calcium Chromium	Silver .	нус	droxide				
Calcium			trate	-		per	Vanadium
Calcium Chromium	Silver .	Nit	trate trite				Vanadium Zinc
Calcium Chromium Chromium,Hex	Silver . Sodium .	Nit	trate trite osphorus,Or		Cop		
Calcium Chromium Chromium,Hex Copper	Silver . Sodium .	Nit	trate trite osphorus,Or lica		Cop		
Calcium Chromium Chromium,Hex Copper	Silver . Sodium .	Nit	trate trite osphorus,Or	tho .	Cop		-
Calcium Chromium Chromium,Hex Copper	Silver . Sodium .	Nit	trate trite osphorus,Or lica	tho .	Cop		-
Calcium Chromium Chromium,Hex Copper	Silver . Sodium .	Nit	trate trite osphorus,Or lica	tho .	Cop		
Calcium Chromium Chromium,Hex Copper 1ron	SilverSodiumZinc .	Nit	trate trite osphorus,Or lica	tho .	Cop	10LOGICS	Zinc
Calcium Chromium Chromium,Hex Copper 1ron	Silver . Sodium . Zinc	Nit	trate trite osphorus,Or lica	✓ All	Coplro	IOLOGICS	Zinc Zinc 228 _{Radium}
Calcium Chromium Chromium,Hex Copper 1ron Total Ph Total Al Total Ha Turbidit	Silver Sodium Zinc vosphorus k. as CaCO3 ardness as CaCO3	Nit	trate trite osphorus,Or lica	All Be	RAD Cop Iro RAD Cha, Gross La, Gross	IOLOGICS	Zinc
Calcium Chromium Chromium,Hex Copper 1ron Total Ph Total Al Total Ha Turbidit	Silver Sodium Zinc osphorus k. as CaCO3 ardness as CaCO3 ky as NTU d. (umhos/cm)	Nit	trate trite osphorus,Or lica	All Be	Coplro	IOLOGICS	Zinc Zinc Z28 _{Radium}

Exact Description of Sampling Point:	Sample Water System No. LS	-GW-02 Source N	o	Date Collecte	d 90/07/_	3/ Time Col	lected //20 24 hr clock
Collector: Jason Know/fon County: Cost Code: Send Report to: Jason Know/fon Wak Bur. of Envir, Resp. +Rend Telephone No: 538-6170 Address: 288 N. 1460 W. S. L. C. 07 8416 Zip: TC PC TM PM BOO Nut Bact Pest THM Rad Spec BOO Cyanide HPN Total Coliforms/100 ml PNP Fecal Coliforms/100 ml PNP Fecal Coliforms/100 ml PNP Fecal Coliforms/100 ml PNP Fecal Coliforms/100 ml PF Fecal Coliforms/100 ml PF Fecal Coliforms/100 ml POC DO Oil & Grease Boron Plox ide Arsenic Manganese Carbonate Barium Potassium Carbon Dioxide Arsenic Manganese Carbonate Barium Potassium Cog Solids Cadmium Potassium Cog Solids Cadmium Nickel Chloride Beryllium Nolybdenum Calcium Selenium Fluoride Chromium Silver Hydroxide Copper Vanadium Copper Zinc Nitrite Iron Zinc Phosphorus October Sulfate Total Phosphorus Sulfate Sulfate Sulfate Sulfate Sulfate Total Phosphorus Sulfate Sulfat			, , ,	, ,	· ·		24 111 61001
Collector: Jason Know/fon	Exact Description o	f Sampling Point:	trip bl	ank			
Send Report to: Jason Knew for Utoh Bur. of Envir. Reso, Hency Telephone No: 538-6170 Address: 288 N. 1460 W. S. L. C. UT 84116 Zip: TC PC TM PM BOO Nut Bact Pest THM Rad Spec BOO Cyanide MPN Total Coliforms/100 ml MPN Fecal Coliforms/100 ml MPN Fecal Coliforms/100 ml MPN Fecal Coliforms/100 ml MP Fecal Coliforms/100 ml MP Fecal Coliforms/100 ml MP Fecal Coliforms/100 ml Pecal Streptococci/100 ml Plate Count - 0rg./ml CATIONS ANIONS TOTAL METALS Ammonia Lead Bicarbonate Aluminum Lead Arsenic Manganese Carbonate Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium Cog Solids Cadmium Mickel Calcium Selenium Fluoride Chromium Selenium Nitrate Chromium Selenium Nitrate Copper Zinc Nitrite Iron Zinc Phosphorus, Ortho Silica Sulfate Total Phosphorus Mitrite Iron Zinc Phosphorus, Ortho Silica Sulfate Total Phosphorus Sulfate Total Phosphorus Sulfate Appla, Gross Z28Radium Uranium Seleta, Gross Uranium S	Leeds Sil	ver Reclama	tion =	Site			
Address: 288 N. 1960 W. S.L.O. UT 84116 Zip:	Collector: Jase	n Knowlton			County	/:	_Cost Code:
TC PC TM PM 800 Nut Bact Pest THM Rad Spec B00 Cyanide MPN Total Coliforms/100 ml TSS Phenolics MPN Fecal Coliforms/100 ml TKN Sulfide MF Total Coliforms/100 ml TXN Sulfide MF Total Coliforms/100 ml TOC pH MF Fecal Coliforms/100 ml Pecal Streptococci/100 ml Plate Count - Org./ml CATIONS ANIONS TOTAL METALS Ammonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Mickel Chloride Beryllium Molybdenum Cadnium Potassium COg Solids Cadmium Mickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Total Hardness as CaCOg Total Alk. as CaCOg Total Alk. as CaCOg Total Hardness as Ca	Send Report to: Ja	son Knowlton	Hah Bur.	of Envir. K	lesp. + Reme	Telephone	но: <u>538-6170</u>
	Address: 288	N. 1460W.	5.L.C.	UT	84116	6	Zip:
TSS Phenolics MPN Fecal Coliforms/100 ml TKM Sulfide MF Total Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Streptococci/100 ml Plate Count - Org./ml CATIONS ANIONS TOTAL METALS Ammonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Wickel Chloride Beryllium Molybdenum Cadmium Potassium Cog Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate	тсрс	TMPM	_BOO	iutBact	Pest	THM	RadSpec
TSS Phenolics MPN Fecal Coliforms/100 ml TKM Sulfide MF Total Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Coliforms/100 ml MF Fecal Streptococci/100 ml Plate Count - Org./ml CATIONS ANIONS TOTAL METALS Ammonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Wickel Chloride Beryllium Molybdenum Cadmium Potassium Cog Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate							
TKN Sulfide MF Total Coliforms/100 ml TOC pH MF Fecal Coliforms/100 ml COO Oil & Grease Fecal Streptococci/100 ml Plate Count - Org./ml CATIONS ANIONS TOTAL METALS Armonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium,Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Total Phosphorus Total Alk. as CaCO3 Total Hardness as CaCO3 Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C MF Total Coliforms/100 ml MF Fecal Streptococci/100 ml Fecal Streptococci/100 ml Fecal Streptococci/100 ml Fecal Streptococci/100 ml MF Fecal Streptococci/100 ml Fecal Streptococci/100 ml MF Fecal Streptococci/100 ml Fecal Streptococci/100 ml Plate Count - Org./ml Manganese Aluminum Lead Arsenic Manganese Aluminum Lead Arsenic Manganese Manganese Aluminum Lead Arsenic Manganese Manganese Carbonate Arsenic Manganese Manganese Carbonate Aluminum Lead Arsenic Manganese Manganese Carbonate Aluminum Mercury Mercury Mercury Mercury Mercury Mercury Mercury Mercury Mercury Manganese Carbonate Aluminum Mercury Mercury Mercury Mercury Manganese Carbonate Aluminum Mercury Mercury Mercury Mercury Mercury Manganese Carbonate Aluminum Mercury Mercur				. 1111			
TOC							
CATIONS ANIONS TOTAL METALS Annonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Total Phosphorus Sulfate Total Phosphorus Total Alk. as CaCO3 Total Hardness as CaCO3 Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C		-					
CATIONS ANIONS ANIONS TOTAL METALS Ammonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium,Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Total Phosphorus Silica Sulfate Total Phosphorus Total Nardness as CaCO3 Total Hardness as CaCO3 Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C							
Armonia Lead Bicarbonate Aluminum Lead Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Mickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium,Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Silica Sulfate		UII & Gre	ase				
Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate	CATIONS	:	AN	<u>CONS</u>		TOTAL	METALS
Arsenic Magnesium Carbon Dioxide Arsenic Manganese Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium,Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate	Ammonia	Lead .	Bicar	rbonate		Aluminum	Lead
Barium Manganese Carbonate Barium Mercury Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate							Manganese
Boron Nickel Chloride Beryllium Molybdenum Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate						Barium	Mercury
Cadmium Potassium CO3 Solids Cadmium Nickel Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate	Boron					Beryllium	Mo1ybdenum
Calcium Selenium Fluoride Chromium Selenium Chromium Silver Hydroxide Cobalt Silver Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Iron Phosphorus,Ortho Silica Sulfate	Cadmium					Cadmium	Nickel
Chromium, Hex Sodium Nitrate Copper Vanadium Copper Zinc Nitrite Iron Zinc Phosphorus, Ortho Silica Sulfate Total Phosphorus Total Alk. as CaCO3 Total Hardness as CaCO3 Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C Nitrate Copper Vanadium Nitrate Copper Vanadium Nitrate Copper Vanadium Alpha, Gross Zinc Alpha, Gross Z28Radium Beta, Gross Uranium 226Radium Z26Radium		Selenium .				Chromium	
	Chromium	Silver .	Hydro	oxide		Cobalt	
	Chromium,Hex	Sodium .	Nitra	ate	. The <u>state</u>	_Copper	
	Copper	Zinc .	Nitr	ite		_lron	Zinc
	lron				15.		
Total Alk. as CaCO ₃ Total Hardness as CaCO ₃ Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C Alpha, Gross Beta, Gross Uranium 228Radium		•	Sulfa	ate	•		
Total Alk. as CaCO ₃ Total Hardness as CaCO ₃ Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C Alpha, Gross Beta, Gross Uranium 228Radium							
Total Alk. as CaCO ₃ Total Hardness as CaCO ₃ Turbidity as NTU Sp. Cond. (umhos/cm) TDS @ 180°C Alpha, Gross Beta, Gross Uranium 228Radium	Total F	hosphorus				RADIOLOGICS	
Total Hardness as CaCO ₃ . Alpha, Gross					-		
Turbidity as NTUBeta, GrossUraniumSp. Cond. (umhos/cm)226RadiumTDS @ 180°C .							
Sp. Cond. (umhos/cm)226Radium		9			Beta, Gro	ss	_Uranium
					226Radium		
Other:	TDS @	80°C					
	Other:			•			

Sample Hoter System Ho LS-	50-01 Source	No	Date Co	ollected	90/07/3/ Tim	e Collecte	1145
		Yaya Y			λλ/ww/qq		24 hr clock
Exact Description of	Sampling Point:_	back	kgroun	d			
Leeds Si							
Collector: <u>Jasor</u>	Know Ito	<u>n</u>	<u> </u>		County:	Cos	t Code:
Send Report to: Jase	on Knowlton,	Utoh	Bur. of E	nvir. Re	sp. + Remed Telep	hone No:	538-6170
Address: 288 N	1. 1460W.	5.4	C. U	T	84116	z	ip:
TCPC	_TMPM	BOD	Nut	Bact	Pest	THM	RadSpec
BOD TSS	Cyanide	cs			MPN Total Co	liforms/1	00 ml
TKN	Sulfide				MF Fecal Col		
TOC	pH 0i1 & G	92597			Fecal Strept		
		cuse			Plate Count		
			·				
CATIONS			ANIONS			OTAL META	<u>LS</u>
Ammonia	_Lead .		Bicarbonate		Alumir	ium _	Lead
Arsenic	Magnesium .		Carbon Diox	ide	Arseni	c _	Manganese
Barium	_Manganese .		Carbonate		Barium	_	Mercury
Boron	_Nickel .		Chloride		Beryll	ium _	Molybdenum
Cadmium	_Potassium .		_CO3 Solids		Cadmiu	and the second second second	Nickel
Calcium	_Selenium .		_Fluoride		Chromi		Selenium
Chromium	_Silver .		_Hydroxide		Cobalt		Silver
Chromium,Hex	_Sodium .		_Nitrate		Copper		Vanadium
Copper	_Zinc .		Nitrite		lron		Zinc
lron			Phosphorus,	ortho			
		((=	Silica				
			_Sulfate				
Total Pho	osphorus				RADIOL	OGICS	
	c. as CaCO3				,		
Total Hai	rdness as Caco3			V	Alpha, Gross	the same of the sa	Radium
Turbidity	y as NTU			1	Beta, Gross	Urai	nium
	. (umhos/cm)				226Radium		
TDS @ 180	0°C						
Other:							

Leeds S	Sampling Point: C	1251049	75		
	n Knowlton		Cou	nty:C	ost Code:
end Report to:	son Knowlton, a	Hoh Bur. of En	vir. Resp. + Re	Telephone No	: 538-6170
odress: 288	N. 1460W.	S.L.C., UT	841,	16	_Zip:
TCPC	TMPM		BactPe	stTHM _	_RadSpec
BO0TSSTKNTOCCOO	Cyanide Phenolics Sulfide pH Oil & Gre		MPN MF Fec	Total Coliforms Fecal Coliforms/ Total Coliforms/ Fecal Coliforms/ al Streptococci/ te Count - Org./	/100 ml 100 ml 100 ml 100 ml
CATIONS		ANIONS		TOTAL ME	TALS
Armonia Arsenic Barium Boron Cadmium Calcium Chromium Chromium,Hex Copper	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	Bicarbonate Carbon Dioxi Carbonate Chloride CO3 Solids Fluoride Hydroxide Nitrate Nitrite Phosphorus,0 Silica Sulfate		Aluminum Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Iron	Lead Manganese Mercury Molybdenur Nickel Selenium Silver Vanadium Zinc
Total A Total H Turbidi	hosphorus Alk. as CaCO ₃ Hardness as CaCO ₃ ty as NTU d. (umhos/cm) 80°C		Alpha, Beta, 0 226 Radi	irossU	²⁸ Radium Iranium

Sample Water System No. LS-	-50-03 Source 1	No Date	Collected 90/0	7/3/ Time Col	lected 1215
			λλ\m	Vdd	24 hr clock
Exact Description of	Sampling Point:	NE Tailing	Pile		
Leeds S	i/ver				
Collector: <u>Jaso</u>	n Knowlton	7	co	xunty:	_Cost Code:
Send Report to: Jas	son Knowl ton	Utah Bur. of.	Envir. Resp. + K	ened Telephone	No: 538-6170
Address: 2881	N. 1460W.	5. L. C., (UT 841	16	Zip:
TCPC	THPH	BODNut	BactP	PestTHM	RadSpec
B00 TSS TKN TOC C00	Cyanide Phenolic Sulfide pH Oil & Gro		MP MF Fe	PN Total Coliform Fecal Coliform Fecal Coliform Fecal Coliform Col	ms/100 ml s/100 ml s/100 ml i/100 ml
CATIONS		ANIONS		TOTAL	METALS
ArmoniaArsenicBariumBoronCadmiumCalciumChromiumChromium,HexCopper1ron	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	Bicarbona Carbon Di Carbonate Chloride CO3 Solid Fluoride Hydroxide Nitrate Nitrite Phosphoru Silica Sulfate	ioxide . e . dis . e .	AluminumArsenicBariumBerylliumCadmiumChromiumCobaltCopperIron	Lead Manganese Mercury Molybdenum Nickel Selenium Silver Vanadium Zinc
Total A Total H Turbidi	nosphorus lk. as CaCO ₃ ardness as CaCO ₃ ty as NTU d. (umhos/cm) 80°C		Alpha, Beta, 226 _{Rac}	RADIOLOGICS Gross Gross dium	228 _{Radium} Uranium

Sample Hater System No. 45	-50-04 Source No.	Date Colle	cted 90/07/30 1	ime Collected 1230
			yy/mm/dd	24 hr clock
Exact Description o	f Sampling Point:	S. Tailing Pil	e	
Leeds _	Silver			
Collector: Jase	in Knowlton		County:	Cost Code:
Send Report to: Ja	son Knowl fon, U	Hoh Bur. of Envir	Resp. + Remed Tel	ephone No: <u>538-6170</u>
Address: 288	N. 1460W.	S.L.C., UT	84116	Zip:
TCPC	TMPM!	B00NutB	actPest	THMRadSpec
BOD TSS TKN TOC COD	CyanidePhenolicsSulfidepHOil & Grea	se .	MPN Fecal MF Total (MF Fecal (Fecal Stre	Coliforms/100 ml Coliforms/100 ml Coliforms/100 ml Coliforms/100 ml eptococci/100 ml nt - Org./ml
CATIONS		ANIONS		TOTAL METALS
Ammonia Arsenic Barium Boron Cadmium Calcium Chromium Chromium,Hex Copper	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	Bicarbonate Carbon Dioxide Carbonate Chloride CO3 Solids Fluoride Hydroxide Nitrate Nitrite Phosphorus,Orth Silica Sulfate	Arse Bar Bery Cadn Chro Coba Copp	ium Mercury yllium Molybdenum nium Nickel omium Selenium alt Silver vanadium
Total A Total H Turbidi	Thosphorus Alk. as CaCO3 Hardness as CaCO3 ty as NTU ad. (umhos/cm) 180°C		Alpha, Gross Beta, Gross 226Radium	<u>228</u> Radium Uranium

Sample Water System No. 15	-SW-01 Source	No	_ Date Co	lected_	90/07/3/ yy/mm/dd	Time Col	lected 140 24 hr	00 clock
Exact Description of	Sampling Point:	Collec	tion K	ond				
Leeds S.								
Collector: <u>Jaso</u>	n Knowlto	n			County:		_Cost Code:_	
Send Report to: Ja	son Knowlton	Utah Bu	r. of En	vir. Re	sp. + Remed Te	elephone (No: <u>538</u> -	6170
Address: 288	N. 1460W.	5.4.	C. UT		84116		Zip:	
TCPC	THPH _	BOD	Nut	Bact	Pest	THM	Rad	_Spec
B00TSSTKNTOCC00	Cyanide Phenoli Sulfide pH Oil & G	cs			MPN Feca MF Total MF Fecal Fecal St	Coliform Coliform Coliform Coliform reptococc unt - Org	ms/100 ml s/100 ml s/100 ml i/100 ml	
CATIONS			ANIONS			TOTAL	METALS	
Ammonia Arsenic Barium Boron Cadmium Calcium Chromium Chromium,Hex Copper	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	CaCaChCCF1HyNiNiPhSi	carbonate arbon Dioxidarbonate aloride 03 Solids duoride ydroxide itrate itrite nosphorus,0 ilica ulfate		Arr Bar Car Chr Co	uminum senic rium ryllium dmium romium balt pper	Lead Manga Mercu Molyt Nicke Selet Silve Vanac Zinc	ury odenum el nium er dium
Total A Total H Turbidi	hosphorus lk. as CaCO ₃ ardness as CaCO ₃ ty as NTU d. (umhos/cm) 80°C			\ <u>\</u>	RA Alpha, Gross Beta, Gross 226 _{Radium}	DIOLOGICS	228 _{Radium} Uranium	

Water System No. 45-5	E-0/ Source	No.	Date Col	lected 9	0/07/31	rime Coll	ected 1400
	7.112				yy/mm/dd		24 hr clock
Exact Description of S.	line Deint.	01/2-	L'an	Pand			
		Lorice	110111	oria			
Leeds Sil	ver						
Collector: Jason	Knowlto	'n			County:		Cost Code:
Send Report to: Jasor	Knowl ton,	Utah Bu	r. of En	vir. Resp	. + Remed Te	ephone N	o: <u>538-6170</u>
Address: 288 N.	1460W.	5.4.0	C. UT	8	34116		Zip:
TCPC	TH PH	BOD	Nut	Bact	Pest _	THM	RadSpec
BO0	Cyanide			- 1 <u>- 1</u>	MPN Total	Coliform	s/100 ml
TSS	Phenoli				MPN Fecal		
TKN	Sulfide				MF Total (
TOC	pH				MF Fecal (
coo	Oil & G	rease		_	Fecal Stre	No. of the last of	
			•				
CATIONS			ANIONS			TOTAL M	ETALS
Ammonia	Lead .	Bi	carbonate		A1ur	ninum	Lead
Arsenic	Magnesium .	Car	rbon Dioxid	de .	Arse	enic	Manganese
Barium	Manganese .	Car	rbonate		Bari	um	Mercury
Boron	Nickel .	Ch	loride		Bery	/llium	Molybdenum
Cadmium	Potassium .		Solids			nium	Nickel
	Selenium .	F1	uoride		Chro	mium	Selenium
	Silver .	Ну	droxide		Coba		Silver
	Sodium .		trate		Copp		Vanadium
	Zinc .		trite		lror	1	Zinc
lron			osphorus, Or	rtho .			
			lica				
		Su	lfate				
Total Phos	phorus		•		PAD	LOLOGICS	
Total Alk.					10.0	3131100	
	ness as CaCO ₂		•	VA	lpha, Gross		228 _{Radium}
Turbidity	_				eta, Gross		Uranium
Sp. Cond.				2	26 _{Radium}	4-1	
TDS @ 180°							
Other:							

Sample Water System No. 6	5-SW-02 Source H	Date Collecte	ed <u>90/07/3/</u> Time C	ollected 1430
			λλ/шυ, σσ	24 hr clock
Exact Description o	of Sampling Point:	Over flow Pona		
Leeds -	Silver			
Collector: Jase	on Knowlton		County:	Cost Code:
Send Report to: Ja	son Knowlton, a	Itah Bur. of Envir. 1	Resp. + Remed Telephon	е но: <u>538-6170</u>
Address: 288	N. 1460W.	S.L.C., UT	84116	Zip:
TCPC	TMPM	_BODNutBac	tPestTHM	RadSpec
B00 TSS TKN TOC COO	Cyanide Phenolics Sulfide pH Oil & Gre		MPN Total Colif MPN Fecal Colifo MF Total Colifo MF Fecal Colifo Fecal Streptoco	orms/100 ml orms/100 ml orms/100 ml occi/100 ml
			Plate Count - 0	rg./ml
CATIONS		ANIONS	. <u>101A</u>	L METALS
Ammonia	Lead .	Bicarbonate	Aluminum	Lead
Arsenic	Magnesium .	Carbon Dioxide	Arsenic	Manganese
Barium	Manganese .	Carbonate	Barium	Mercury
Boron	Nickel .	Chloride	Beryllium	The state of the s
Cadmium	Potassium .	co3 Solids	Cadmium	Nickel
Calcium	Selenium .	Fluoride	Chromium	Selenium
Chromium	Silver .	Hydroxide	Cobalt	Silver
Chromium,Hex	Sodium .	Nitrate	Copper	Vanadium Zinc
Copper	Zinc .	Nitrite	lron	Zinc
lron		Phosphorus,Ortho		
		Silica		
	•	Sulfate		
	·		·	
Total	Phosphorus		RADIOLOGI	<u>cs</u>
Total /	Alk. as CaCO3		/	
Total	Hardness as Caco3	<u>. </u>	Alpha, Gross _	228Radium
Turbid	ity as NTU		Beta, Gross	Uranium
Sp. Cor	nd. (umhos/cm)		226 _{Radium}	
TDS @	180°C			
Other:				

Sample No. 6	5-SE-02 Source No.	Date Colle	ected <u>90/07/3/</u> Ti	me Collected 1430 24 hr clock
vact Description of	Sampling Point:	Breeflow for		
Leeds.		100 700		
	n Knowlton		County:	Cost Code:
A STATE OF THE STA				phone No: 538-6170
	N. 1460W			Zip:
TCPC	TMPMB	000NutE	Bact Pest	THMRadSpec
BO0	Cyanide Phenolics			coliforms/100 ml
TKN	Sulfide			liforms/100 ml
TOC	DH DH			liforms/100 ml
	Oil & Greas			tococci/100 ml
			Plate Count	
CATIONS		ANIONS		TOTAL METALS
Ammonia	Lead .	Bicarbonate	. Alumi	numLead
Arsenic	Magnesium .	Carbon Dioxide	. Arsen	ic Manganese
Barium	Manganese .	Carbonate	. Bariu	m Mercury
Boron	Nickel .	Chloride	. Beryl	liumMolybdenum
Cadmium	Potassium .	$\underline{\hspace{1cm}}$ ∞_3 Solids	Cadmi	umNickel
Calcium	Selenium .	Fluoride	Chron	
Chromium	Silver .	Hydroxide	Cobal	The state of the s
Chromium,Hex _	Sodium .	Nitrate	Coppe	
Copper _	Zinc .	Nitrite	lron	Zinc
lron		Phosphorus,Ort	no .	
		Silica		
		Sulfate		
	hosphorus		RADIO	DLOGICS
	1k. as CaCO3		Valence const	228 _{Radium}
	ardness as Caco3		Alpha, Gross	Uranium
	ty as NTU		Beta, Gross 226Radium	Oralifull
	d. (umhos/cm)		Kadium	
TDS @ 1	00 C			
Other:_				

Sample Water System No. LS	-5W-04 Source A	ю	Date Colle	ected 90/0	<u>07/3/</u> Time	Collected	1430 24 hr clock
		2 1	1 0	The second second	iiv dd		.4 III CIOCK
Exact Description o	f Sampling Point:	Vert 1	ow Po	nd			
Leeds 3	silver						
Collector: Jaso	n Knowlton	7		(County:	Cost C	Code:
Send Report to: Ja	son Knowlton	Utah Bur.	of Envi	r. Resp. +	Rened Teleph	one No: <u>5</u>	38-6170
Address: 288	N. 1460W.	5.L.C.	UT	84	116	Zip:	
TCPC	THPH	_BO0	NutE	Bact	PestT	/Rac	dSpec
BO0TSSTKNTOCCO0	Cyanide Phenolic Sulfide pH Oil & Gro				MPN Total Col MPN Fecal Col MF Total Coli MF Fecal Coli Fecal Strepto Plate Count -	iforms/100 m forms/100 m forms/100 m ococci/100 m	ml nl nl
CATIONS	:	<u>AN</u>	IIONS	•	īc	OTAL METALS	
ArmoniaArsenicBariumBoronCadmiumCalciumChromiumChromium,HexCopperlron	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	Carb Carb Chlc C03 Fluc Hydr Nitr	rite sphorus,Ort! ica		Aluminu Arsenid Barium Berylli Cadmium Chromiu Cobalt Copper Iron		Lead Manganese Mercury Molybdenum Nickel Selenium Silver Vanadium Zinc
Total # Total # Turbidi				Beta	RADIOLO a, Gross , Gross adium	OGICS 228 _{Rad} Uranii	

Sample Ho. LS	-SE-04 Source No	Date Col	lected 90	107/31	Time Colle	ected 14	30
			У	y/mm/dd		24 hr	clock
Exact Description of	f Sampling Point: Ov	erflow Por	nd.				
Leeds -	Silver						
Collector: <u>Jaso</u>	n Knowlton			_County:	(Cost Code:_	
	son Knowlton, Ut		,		lephone N	: 538-	6170
Address: 288	N. 1460W. S	S.L.C. UT	8	4116		Zip:	
7.001 233.							
TCPC	TMPMBC	0Nut	_Bact _	Pest	THM	Rad	_Spec
						•	
800	Cyanide	:		- The state of the	Coliform		
TSS	Phenolics		- P - 1		Coliform		
TKN	Sulfide		-		Coliforms.		
TOC	DH		_		Coliforms.		
000	Oil & Grease		_		int - Org.		
		•	_	Plate wo	iit - org.	, 1111	
		•					
CATIONS		ANIONS			TOTAL M	ETALS	
Ammadia	land	Disambassas		A1.	minum	Lead	
Ammonia	Lead .	Bicarbonate Carbon Dioxid			enic	Manga	nese
Barium	Magnesium . Manganese .	Carbonate	е .	-	ium	Mercu	
Boron	Nickel .	Chloride	- L.		yllium		denum
Cadmium	Potassium .	CO ₃ Solids			mium	Nicke	
Calcium	Selenium .	Fluoride			omium	Selen	ium
Chromium	Silver .	Hydroxide			alt	Silve	r
Chromium, Hex	Sodium .	Nitrate		Cop	per	Vanad	ium
Copper	Zinc .	Nitrite		lro	n	Zinc	
lron		Phosphorus, Or	tho .				
		Silica					
		Sulfate					
	hosphorus			RAL	HOLOGICS		
	ilk. as CaCO3		1	-h- C		228 _{Radium}	
	lardness as CaCO3			pha, Gross		Uranium	
	ty as NTU		22	ta, Gross ⁶ Radium	_	or an run	
	id. (umhos/cm)	•		Radiuli			
TDS @ 1		•					
Other:_		-					

Sample Hater System No. 45	-SE-03 Source	No.	Date Col	lected 90	1/07/3/ 1	ime Collect	ted 1530
				У	y/mm/dd		24 hr clock
Exact Description of	Campling Point	Sacra	Lacre	To soil	nd mont		
CARCE DESCRIPTION OF	- 1	-econ	any of	-mpoo.	ianen,		
Leeds S.	lver						
collector: Jaso	n Knowlto	'n			County:	Co:	st Code:
Send Report to: Ja				,		ephone No:	538-6170
Address: 288	N. 1460W.	5.4.	C. UT	8	4116		Zip:
TCPC	TMPM _	800	Nut	_Bact _	Pest	THM	_RadSpec
BOD TSS TKN TOC COO	Cyanide Phenoli Sulfide pH Oil & G	cs			MPN Total (MPN Fecal (MF Total Co MF Fecal Co Fecal Stree Plate Coun	Coliforms/10 oliforms/10 oliforms/10 otococci/10	100 ml 00 ml 00 ml 00 ml
CATIONS			ANIONS			TOTAL META	ALS
Ammonia Arsenic Barium Boron Cadmium Calcium Chromium Chromium,Hex Copper	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc	Ca Ch Ch F1 Ni Ni Ph Si	carbonate rbon Dioxid rbonate loride g Solids uoride droxide trate trite cosphorus,Or lica		AlumArseBariBeryCadmChroCobaCoppeIron	nic um Ilium ium nium lt	Lead Manganese Mercury Molybdenum Nickel Selenium Silver Vanadium Zinc
Total A Total H Turbidi	hosphorus 1k. as CaCO ₃ ardness as CaCO ₃ ty as NTU d. (umhos/cm) 80°C			Be	pha, Gross ta, Gross ⁶ Radium		⁸ Radium anium



Sample Water System No. 65-	SW-05 Source	No	Date Col	lected	90/08/01	ime Coll	ected 0800
					yy/mm/dd		24 hr clock
Exact Description of	Campling Point:	down -	trong	1	•		
		CIOWIS	11000	The W	A. Chef		
Leeds Si	luer						
Collector: Jaso.	n Knowlto.	n			County:		Cost Code:
Send Report to: Jas	on Knowlton,	Utoh Bur.	of En	vir. Res	o. + Remed Te	ephone M	to: <u>538-6170</u>
Address: 288/	N. 1460W.	5.4.6	2, 07		84116		Zip:
TCPC	TMPM	BOD	_Nut	_Bact	Pest _	THM	RadSpec
800	Cyanide				MPN Total	Coliforn	ms/100 ml
TSS	Phenolic	s			MPN Fecal		
TKN	Sulfide				MF Total	Coliforns	s/100 ml
TOC	pH				MF Fecal	Coliforns	s/100 ml
	Oil & Gr	ease			Fecal Str	eptococci	i/100 ml
					Plate Cou	nt - Org.	./m1
CATIONS		A	NIONS			TOTAL P	METALS
Ammonia	Lead .	Bic	arbonate		Alur	ninum	Lead
Arsenic	Magnesium .	-	bon Dioxid	de .	Ars	enic	Manganese
Barium	Manganese .		bonate		Bar	ium	Mercury
Boron	Nickel .	Ch1	oride		Ber	yllium	Mo1ybdenum
Cadmium	Potassium .		Solids		Cad	nium	Nickel
Calcium	Selenium .		oride		Chr	omium	Selenium
Chromium	Silver .	Hyd	roxide		Cob	alt	Silver
Chromium,Hex	Sodium .	Nit	rate		Cop	per	Vanadium
Copper _	Zinc .		rite		lro	n	Zinc
lron			sphorus, Or	rtho .			
			ica				
		Su1	fate				
Total P	hosphorus				RAD	IOLOGICS	
	lk. as CaCO3						
	ardness as CaCO2			V	Alpha, Gross		228 _{Radium}
	ty as NTU		Ju. 19 th		Beta, Gross		Uranium
	d. (umhos/cm)		g. L.		226 Radium		
TDS @ 18							
Other:_							

Sample Water System No. 65	-SE-05 Source	No	Date Coll	ected_	90/08/01	Time Col	lected 02	300
		,			yy/mm/dd		24 nr	CIOCK
Exact Description o	f Sampling Point:	dow	nstream					
Leeds -	Silver							
Collector: <u>Jase</u>	on Knowlto	on			County:		_Cost Code:_	
Send Report to: Ja	son Knowlton	Utoh	Bur. of Env.	ir. Re	sp. + Remed Te	elephone (No: <u>538-</u>	6170
Address: 288	N. 1460W.	5.	L.C. UT		84116		Zip:	
TCPC	TNPM _		Nut	Bact	Pest	THM	Rad	_Spec
BO0TSSTKNTOCCO0	Cyanide Phenoli Sulfide pH Oil & 0	ics			MPN Feca	reptococc	ms/100 ml s/100 ml s/100 ml i/100 ml	
CATIONS			ANIONS			TOTAL	METALS	
Armonia Arsenic Barium Boron Cadmium Calcium Chromium Chromium,Hex Copper 1ron	Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Zinc		Bicarbonate Carbon Dioxide Carbonate Chloride CO3 Solids Fluoride Hydroxide Nitrate Nitrite Phosphorus,Ore Silica Sulfate		Ars Bar Ber Cac	uminum senic rium ryllium dmium romium palt oper	Lead Manga Mercu Molyt Nicke Seler Silve Vanac Zinc	ury odenum el nium er
Total A Total H Turbidi				\ <u>\</u>	Alpha, Gross Beta, Gross ²²⁶ Radium	DIOLOGICS	228 _{Radium} Uranium	

Sample Water System No. 45	-SW-06 Source No.	Date Collect	ted 90/08/01 Time	Collected 0830
			yy/mm/dd	24 hr clock
Exact Description o	f Sampling Point:	backacound		
		actyroona		
Leeds S	ilver			
Collector: Jase	in Knowlton		County:	Cost Code:
Send Report to: Ja-	son Knowlton, U	Hah Bur. of Envir.	Resp. + Remed Telepho	one No: 538-6170
Address: 288	N. 1460W.	S.L.C. UT	84116	Zip:
TC PC	TN PM	BOD Nut Ba	ct Pest Ti	HMRadSpec
200			MPN Total Col	i form (100 m)
800 TSS	Cyanide Phenolics		MPN Fecal Col	
TKN	Sulfide		MF Total Coli	
TOC	DH DH		MF Fecal Coli	
	Oil & Grea	SP	Fecal Strepto	
			Plate Count -	
CATIONS		ANIONS	. <u>10</u>	TAL METALS
Ammonia	Lead .	Bicarbonate	Aluminu	mLead
Arsenic	Magnesium .	Carbon Dioxide	Arsenic	Manganese
Barium	Manganese .	Carbonate	Barium	Mercury
Boron	Nickel .	Chloride	Berylli	umMolybdenum
Cadmium	Potassium .	$_{\infty}$ Solids	Cadmium	
Calcium	Selenium .	Fluoride	Chromiu	
Chromium	Silver .	Hydroxide	Cobalt	Silver
Chromium,Hex	Sodium .	Nitrate	Copper	Vanadium
Copper	Zinc .	Nitrite	lron	Zinc
lron		Phosphorus,Ortho		
		Silica		
		Sulfate		
	<u> </u>			
Total F	hosphorus		RADIOLO	GICS
	ilk. as CaCO3	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	/	200
	lardness as Caco3		Alpha, Gross	228Radium
the state of the s	ty as NTU		Beta, Gross	Uranium
	id. (umhos/cm)		226Radium	
TDS @ 1				
Other:				



Water System No. 65	5-5E-06 Source No	Date Co	llected 90/0	08/0/ Time Co	Nected <u>0830</u>
			33/m	m/dd	24 hr clock
Exact Description o	f Sampling Point:	packground	, · ·		
Leeds 5					
	on Knowlton				Cost Code:
					_Cost Code:
Send Report to: Ja	son Knowlton, U	Hah Bur. of Er	vir. Resp. +1	Remed Telephone	No: 538-6170
Address: 288	N. 1460W.	S.L.C. U.	T 84	116	Zip:

TCPC _	TMPM	BODNut	Bact	PestTHM	RadSpec
000				Du Tatal Califor	(100 -1
BOD	Cyanide Phenolics		-	IPN Total Colifor	
TKN	Sulfide		-	F Total Coliforn	
TOC	DH DH			F Fecal Coliforn	
C00	Oil & Grea	ise .	Control of the last of the las	ecal Streptococ	
				late Count - Or	
CATIONS		ANIONS		TOTAL	METALS
Ammonia	Lead .	Bicarbonate		Aluminum	Lead
Arsenic	Magnesium .	Carbon Dioxi	ide .	Arsenic	Manganese
Barium	Manganese .	Carbonate		Barium	Mercury
Boron	Nickel .	Chloride		Beryllium	Mo1ybdenum
Cadmium	Potassium .	co3 Solids		Cadmium	Nickel
Calcium	Selenium .	Fluoride		Chromium	Selenium
Chromium	Silver .	Hydroxide		Cobalt	Silver
Chromium, Hex	Sodium .	Nitrate		Copper	Vanadium
Copper	Zinc .	Nitrite		Iron	Zinc
lron		Phosphorus,(Ortho .		
		Silica			
	eg la de la companya	Sulfate			
	•		•		
	hosphorus			RADIOLOGIC	
	lk. as CaCO3		./	0	228 _{Radium}
	ardness as CaCO3			, Gross	Uranium
	ty as NTU		Beta, 226 _{Ra}	Gross	_orali luli
	d. (umhos/cm)		Ra	latum	
TDS @ 1					
ouler					

					Wanty 19/14/12	1 / 3794	/ / /	1 / / / /
MOJ. NO.		PHOJECI NAME	Silver Reclamation	<u> </u>	- Not yet adult Francis	12/	/ / /n/	101203
	1			NO.		325	100	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
UPLEA	UPLERS: 15.gnature	Jas	Month nost nos	OF CON.	Tag Numbers:	729 00 809 00 1 KEN 2	13430 250 100 100 100 100 100 100 100 100 100 1	PEN 102 VET NEMARKS
				TAINERS		41.	14E 347	O TO
IT. NO.	DATE	TIME	STATION LOCATION			-		anos.
15-10 GW-01	7/31/90	1105	existing well	/	UT4005	-	1/1/	
-57	17.7	111	11.1 plant	+	HOUR		1 1 100	tetes 8/2/40
78	7/31	5411	7	,	1004		1	Y's
50-02	7/31	1200	Ore Stockpile	/	4008		7	
57	1/31	1215	NE Tailing Pile	. /	4009		7/7	
25.2	7/31	1230	STailing Pile	/	4010		/ /	
10.13	7/31	1400	1	_	1104		/ /	2,2 . 7
•	7/3)	00H!	120	-	4012		1/1/	
	7/31	1430	estlow H		6104		1	5.2.0%
- 57	7/31	1430	Alow 1	_	4014		7/	
1	7/3/	1430	V	(4015			2000 15
15-04 SF-04	1/3/	1430	flow 1	-	9104		1, 1,	
15 - 27 55 - 03	1/3/	1530	Secondary Impdunt		4017		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1
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M	May May 1	M	3				-	
Inquishe	nquished by: (Signature)	(einjeut)	Date: Time Received by: (Signeture)	(Signeture)	Relinquished by: (Signature)	Signature)	Date/Time	Received by: (Signature)
Witne	Witness : 15.gnature)	(eintent	Date/Time Rucelved for Laboratory	Laboratory	by: Dele/Time	rno Remerke		*
			- Re S	R. S. Retold	8-2-80 1	13:04		

IT	ODO IECT NAME	NAME				/ /	/ / /	13/ / /
	Leeds	Silver Reclamation	ייסיי ווחס.					TRY
HPLERS: (Sugnature)	(Tason	on know ton	OF CON-	Tag	Numbers:	1400 624 1400 608 1400 608	559 613	STOCHEMIS TO THE MARKS
IT. NO. DATE	TIME	STATION LOCATION	TAINENS	'n	TAM	,	1410	oldwes Six
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1/8 - 55 8/1		Lownstream	_	4019	19		1	11.9
1/8 -57				4020	20		1/1/1	100: 23
		background		402	72	7	777	
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STORY OF THE PERSON OF THE PER								

COLLECTION POND(LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: COLLECTION POND(LEEDS SILVER REC.SITE)

Site ID:

Source: 00

Date of Review and QA Validation

Cost Code:

365

Inorganic Review: 90/09/24

Lab Number:

9005111

Type: 04

Organic Review: Radiochemistry Review: 90/09/20

Sample Date: 90/07/31 Time: 14:00

Microbiology Review:

Tot. Cations:

Tot. Anions: Grand Total:

mg/1mq/1 Cations: Anions:

me/l

me/l

Laboratory Analyses

Sulfide

Q0 mg/l 5760 pc/l

Alpha, grs

2730 pc/1 +/-155.

Beta gross

+/-940.0

Trocuri

JBO Page:

OVERFLOW POND (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: OVERFLOW POND (LEEDS SILVER REC.SITE)

Site ID:

Source: 00

Date of Review and QA Validation

Cost Code: 365

9005113 Type: 04

Inorganic Review: 90/09/24 Organic Review:

Lab Number:

Sample Date: 90/07/31 Time: 14:30

Radiochemistry Review: 90/09/20

Tot. Cations:

Microbiology Review:

Tot. Anions: Grand Total:

mg/l mg/l Cations: Anions:

me/1 me/1

Laboratory Analyses

Sulfide Beta gross

Q0 mg/1 13 pc/1

+/-28.0

Alpha, grs

 $\langle 1 \text{ pc/l} + /-29.0 \rangle$

Approved by:

OVERFLOW POND (LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W
SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: OVERFLOW POND (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review: 90/09/24

Lab Number: 9005115 Type: 04 Organic Review: Sample Date: 90/07/31 Time: 14:30 Radiochemistry Review: 90/09/20

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l

Grand Total: mg/l Anions: me/l

Laboratory Analyses

Sulfide Q0 mg/l Alpha, grs 53 pc/l +/-32.0

Beta gross 67 pc/l +/-29.0

Approved by:

DOWNSTREAM (LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: DOWNSTREAM (LEEDS SILVER REC.SITE)

SALT LAKE CITY UT 84116

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review: 90/11/09

Lab Number: 9005118 Type: 40 Organic Review:

Sample Date: 90/08/01 Time: 08:00 Radiochemistry Review: 90/11/09
Tot. Cations: Microbiology Review:

Tot. Cations: Microbiology Revi
Tot. Anions: mg/l Cations: me/l

Grand Total: mg/l Anions: me/l

Laboratory Analyses

Sulfide NO Alpha, grs 4 pCi/g +/-3.0Beta gross <1 pCi/g +/-3.0

Approved by:

BACKGROUND (LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W
SALT LAKE CITY UT 84116

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: BACKGROUND (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review:

Lab Number: 9005120 Type: 04 Organic Review: Sample Date: 90/08/01 Time: 08:30 Radiochemistry Review:

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

Alpha, grs $4 \text{ pc/l} + \frac{1}{3.0} \text{ Beta gross} = \frac{16 \text{ pc/l}}{16 \text{ pc/l}} + \frac{1}{4.0} \text{ Beta gross}$

Approved by:

J. Oman



538-6170

FEORIVED

BACKGROUND (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H.

288 N 1460 W

SALT LAKE CITY UT 84116

NOV 28 1990

Utah Dept. of Health 538-61700 of Solid & Hazardous Waste

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Site ID:

Description: BACKGROUND (LEEDS SILVER REC.SITE) Source: 00

Date of Review and QA Validation

Cost Code: 365

Type: 50

Inorganic Review: Organic Review:

Lab Number:

9005107

Radiochemistry Review:

Sample Date: 90/07/31 Time: 11:45

Microbiology Review:

Tot. Cations:

Tot. Anions: Grand Total:

mg/l

mg/l Cations: Anions:

me/1 me/1

Laboratory Analyses

226 Radium

1.3 pCi/g +/-0.3

Approved by: . Cruan



ORE STOCKPILE (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: ORE STOCKPILE (LEEDS SILVER REC.SITE)

Site ID: Source: 00 Date of Review and QA Validation

Cost Code: 365 Inorganic Review:

Lab Number: 9005108 Type: 50 Organic Review:

Sample Date: 90/07/31 Time: 12:00 Radiochemistry Review: Microbiology Review:

Tot. Cations:

Tot. Anions: me/l mg/1 Cations: Grand Total: me/1mq/1Anions:

Laboratory Analyses

226 Radium

13 pCi/g +/-0.5

Approved by:

NE TAILING PILE(LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: NE TAILING PILE(LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review:

Lab Number: 9005109 Type: 50 Organic Review: Sample Date: 90/07/31 Time: 12:15 Radiochemistry Review:

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 4.4 pCi/q +/-0.3

Approved by:

S TAILING PILE(LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: S TAILING PILE(LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365
Lab Number: 9005110 Type: 50 Inorganic Review: Organic Review:

Sample Date: 90/07/31 Time: 12:30 Radiochemistry Review:

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 14.4 pCi/q +/-0.6

Approved by: \ . Cman

COLLECTION POND(LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W
SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: COLLECTION POND(LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review: Lab Number: 9005112 Type: 40 Organic Review:

Sample Date: 90/07/31 Time: 14:00 Radiochemistry Review:

Tot. Cations: Microbiology Review: Tot. Anions: mg/l Cations: me/l

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 4.8 pCi/g +/-0.4

Approved by:

J. Cman



90/11/08 15:40

OVERFLOW POND (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: OVERFLOW POND (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365
Lab Number: 9005114 Type: 50 Inorganic Review: Organic Review:

Sample Date: 90/07/31 Time: 14:30 Radiochemistry Review:

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 3.3 pCi/g +/-0.3

Approved by: J. Oman

OVERFLOW POND (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: OVERFLOW POND (LEEDS SILVER REC.SITE)

Source: 00

Date of Review and QA Validation

Site ID: Cost Code:

365

Inorganic Review:

Lab Number:

9005116 Type: 50 Sample Date: 90/07/31 Time: 14:30

Organic Review: Radiochemistry Review:

Tot. Cations:

Microbiology Review:

me/1

Tot. Anions: Grand Total: mg/l

Cations: Anions:

me/1

Laboratory Analyses

226 Radium

2 pCi/g +/-0.4

Approved by: \ . Owan

SECONDARY IMPOUNDMENT (LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W
SALT LAKE CITY UT 84116 538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: SECONDARY IMPOUNDMENT (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365 Inorganic Review:

Lab Number: 9005117 Type: 50 Organic Review: Sample Date: 90/07/31 Time: 15:30 Radiochemistry Review:

Tot. Cations:

Kadiochemistry Review:

Microbiology Review:

Tot. Anions: mg/l Cations: me/l

Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 1 pCi/q +/-0.3

Approved by: L. Oman

DOWNSTREAM (LEEDS SILVER REC.SITE)
JASON KNOWLTON/U.B.E.H.
288 N 1460 W
SALT LAKE CITY UT 84116

538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: DOWNSTREAM (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365
Lab Number: 9005119 Type: 40 Inorganic Review: Organic Review:

Sample Date: 90/08/01 Time: 08:00 Radiochemistry Review:
Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l

Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 1.4 pCi/g +/-0.4

Approved by: \ Cman

BACKGROUND (LEEDS SILVER REC.SITE) JASON KNOWLTON/U.B.E.H. 288 N 1460 W

SALT LAKE CITY UT 84116 538-6170

UTAH STATE HEALTH LABORATORY Environmental Chemistry Analysis Report

Description: BACKGROUND (LEEDS SILVER REC.SITE)

Site ID: Source: OO Date of Review and QA Validation

Cost Code: 365
Lab Number: 9005121 Type: 40
Inorganic Review: Organic Review:

Sample Date: 90/08/01 Time: 08:30 Radiochemistry Review:

Tot. Cations: Microbiology Review:

Tot. Anions: mg/l Cations: me/l Grand Total: mg/l Anions: me/l

Laboratory Analyses

226 Radium 0.9 pCi/g +/-0.3

Approved by:

Environmental Services Division	Environmental Services Division	tal Servi	ces D	ivisio	7	THE PUBLIFORM CHAIN	OF CUS	CHAIN OF CUSTODY RECORD	DE	DENVER, CO. 80202-2413	-2413
PROJ. NO.		PROJECT NAME	TNA	ME	200	ady		//	/	I AMMERICAN	DOGM MI & DOGGM
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STAT. NO.	DATE	TIME	сомь.	аяяэ	STATIO	STATION LOCATION	TAINERS	Jan	18	Sample #	Tag #
12-4201	7/3/40	1105		X	existing	well	1	1	M	HHLDAHW	8-15809
15-CW 02	1/2/	1120		X	trio Blan	14	1	/	MA	MHP 745	8-15810
10-05-57	121	1145		X	backgrou	had	/	/	MA	9HL dffly	11851-8
10-05-57	10/1	1200		X	One Stack	Soile	_	1	MH	MHP747	8-15812
15-50-03	12/	1215		X	NE Tailing	9 P. 16	_	7	MM	MHP 748	8-15813
40-05-57	18/1	1230		X	S Tailin	9 Pile	1	,	178	PHP 749	8-15814
10-15-57	15/1	1400		X	Collection	n Pond	7	7	MH	AHD SED	8-45815, 15816
15-52-4	1/21	1400	×		Collection	n Pond	/	1	M	MHPZSI	8-15817
7078-57	15/2	1430		X	Overflow	Pond	1	/	MA	4HP 752	8-12818
15-5E-02	1/2/	1730		X	Overtlow	Pond	/	/	MA	MHP 753	8-15819
Horses 57	1/3/	1430		×	Overtlow	Pond	1	/	116	HADZZH	8-15820
15-55-04	7/3/	1430		X	OverAlow	God	1	/	118	MAPZES	8-15821
ED-45-57	7/3/	1530		X	Seconday	Impdont.	/	_	M	25× 8HM	8-15825
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Relinquished by: (Signature)	ed by: (Sig	mature)			Date/Time	Received by: (Signature)		Relinquished by: (Signature)	(8	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	ad by: (Sig	nature)			Date/Time	Received for Laboratory by: (Signature)	47	Date/Time S 03 10:35	Remarks		1000 1000 1000 1000 1000 1000 1000 100
DIS	stribution: Or	iginal Accor	mpanies	Shipme	ant: First Copy to Coordinate	Distribution: Original Accompanies Shipment: First Copy to Coordinator Field Files: Second Copy to Representative of Inspected Facility	sentative of I	nspected Facility	Split Samples:	Declined	Simatura
R8 EPA-014B (4-21-86)	4B (4-21-8	36)						158	1		8-14605

U.S. ENVIRONMENTAL PROTECTION AGENCY Environmental Services Division

CHAIN OF CUSTODY RECORD

REGION VIII, ONE DENVEH PLACE 999 18TH. STREET DENVER, CO. 80202-2413

		REMARKS	Sands Tag #	MHPZ57 8-15826	MHP258 8-15827		MHP 760 8-45829			75,			Date/Time Received by: (Signature)	Date/Time Received by: (Signature)	
111			No. X O. Y.	7	7	/	7						Relinquished by: (<i>Signature</i>)	Relinquished by: (Signature)	Date/Time Remarks
	Lack Silver Recharition	(Jason Knowston)	B STATION LOCATION	X downstragm	X dreinsteam 1	12	X brokground 1						Date(Time Received by: (Signature)	Date/Time Received by: (Signature)	Date/Time Received for Laboratory by: (Signature)
PBO I NO LOGO I COT NAME		SAMPLERS: (Signature)	STAT. NO. DATE TIME OO	15-54.05 811.90 0800		0830	15-54 05 34 70 D&30						Relinquished by: (Signature)	Relinquished by: (Signature)	Relinquished by: (Signature)

Distribution: Original Accompanies Shipment: First Copy to Coordinator Field Files: Second Copy to Representative of Inspected Facility

Split Samples:

15-3W-01

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

ame: Chemtech Consulting Group Contract: 68-W8-0061

MHP744

Code: CHEM

Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

.atrix (soil/water): WATER

Lab Sample ID: 00412-01S

Level (low/med): Low

Date Received: 08/03/90

3 Solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	69.00	Ū	11	P
7440-36-0	Antimony	48.00	12125	U	P
7440-38-2	Arsenic	[8.70]		u	F
7440-39-3	Barium	144.00			P
7440-41-7	Beryllium	(2.30)			P
7440-41-7	Cadmium	5.00		11	P
7440-70-2	Calcium	94600.00	-	~	P
7440-47-3	Chromium	9.00	U	11	P
7440-48-4	Cobalt	14.00	U	11	P
7440-50-8	Copper	21.00	U	4	P
7439-89-6	Iron	116.00		u	P
7439-92-1	Lead	20.00	TT	UTN	F
7439-95-4	Magnesium	46000.00	-	9.1	P
7439-96-5	Manganese	122.00			P
7439-97-6	Mercury	0.36	-		CV
7440-02-0	Nickel	27.00	U	11	P
7440-09-7	Potassium	3000.00	B	ď	A
7782-49-2	Selenium	30.00	To the	UW	F
7440-22-4	Silver	8.00			P
7440-23-5	Sodium	46200.00	,0	d n	P
7440-28-0			TT	UW	
7440-62-2	Vanadium	The second secon	U	UN	F
7440-66-6	Zinc	35.40	0	U	P
	Cyanide	35.40			P
	-Janiae			I y the same	NR

U= WDETECTED J=ESTIMATED CONCENTRATIO QUALITY CONTROL CRITERIA NOT MET [] = ESTIMITED CONCENTATION THE LISTED CONCENTRATION IS BELOW THE "CONTRACT PERUIRED DETECTION LIMIT! HOWEVER, PRESENCE OF THE MATERIAL IS RECHABLE.

olor Before: COLORLESS Clarity Before: CLEAR

Texture:

olor After: COLORLESS

Clarity After: CLEAR

Artifacts:

comments:

15-64-02

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP745

ab Name: Chemtech Consulting Group Contract: 68-W8-0061

Lab Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): WATER

Lab Sample ID: 00412-025

Level (low/med): LOW

Date Received: 08/03/90

% Solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	69.00	Ū	11	P
7440-36-0	Antimony	48.00			P
7440-38-2	Arsenic	5.00	U	1/	F
7440-39-3	Barium	29.00		ki.	P
7440-41-7	Beryllium	2.00	U		P
7440-41-7	Cadmium	5.00	U	V	P
7440-70-2	Calcium	870.00	U	0	P
7440-47-3	Chromium	9.00	U	U	P
7440-48-4	Cobalt	14.00	U	lu	P
7440-50-8	Copper	[22.30]	В		P
7439-89-6	Iron	763.90	В		P
7439-92-1	Lead	2.00	U	UN	F
7439-95-4	Magnesium	[98.00]		0	P
7439-96-5	Manganese	12.00	U	u	P
7439-97-6	Mercury	2.30			CI
7440-02-0	Nickel	27.00	U	u	P
7440-09-7	Potassium	1000.00	U	u	A
7782-49-2	Selenium	3.00	U	UW	F
7440-22-4	Silver	8.00		YIN	P
7440-23-5	Sodium	3060.00		Ŭ	P
7440-28-0	Thallium	5.00	U	U	F
7440-62-2	Vanadium	24.00		u	P
7440-66-6	Zinc	12.20	B		P
	Cyanide		100		NE

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

MHP746

, Name: Chemtech Consulting Group Contract: 68-W8-0061

Lab Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): SOIL

Lab Sample ID: 00412-03S

Level (low/med): LOW

Date Received: 08/03/90

% Solids:

97.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15800.00	-		P
7440-36-0	Antimony	9.90	U	U	P
7440-38-2	Arsenic	2.10			F
7440-39-3	Barium	237.00			P
7440-41-7	Beryllium	[0.87]	В		P
7440-41-7	Cadmium	1.00	U	V	P
7440-70-2	Calcium	47400.00			P
7440-47-3	Chromium	11.00			P
7440-48-4	Cobalt	(3.80)	В		P
7440-50-8	Copper	11.70			P
7439-89-6	Iron	7590.00			P
7439-92-1	Lead	4.10	U	UIN	F
7439-95-4	Magnesium	14500.00		الما	P
7439-96-5	Manganese	480.00			P
7439-97-6	Mercury	0.96		NN	CV
7440-02-0	Nickel	10.00		30	P
7440-09-7	Potassium	3010.00		J *	A
7782-49-2	Selenium	0.62	U	UW	F
7440-22-4	Silver	1.60	U	u	P
7440-23-5	Sodium	630.00	U	t	P
7440-28-0	Thallium	1.00	U	U	F
7440-62-2	Vanadium	20.70			P
7440-66-6	Zinc	32.90			P
	Cyanide			2	NR

Color Before: BROWN Clarity Before:

Texture: MEDIUM

Color After: COLORLESS Clarity After:

Artifacts:

Comments:



EPA SAMPLE NO.

MHP747

ame: Chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): SOIL

Lab Sample ID: 00412-04S

Level (low/med): LOW

Date Received: 08/03/90

Solids: 99.7

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	1
7429-90-5	Aluminum	6310.00	-		_ I	<u> </u>
7440-36-0	Antimony	9.60	U	U	E	2
7440-38-2	Arsenic	100.00	U	US	F	7
7440-39-3	Barium	242.00			I	
7440-41-7	Beryllium	1.10			I	9
7440-41-7	Cadmium	8.60			I	P
7440-70-2	Calcium	11900.00		100	I	P
7440-47-3	Chromium	7.80		THE BUT	I	P
7440-48-4	Cobalt	20.10		The same	I	P
7440-50-8	Copper	2080.00			I	P
7439-89-6	Iron	8400.00		-	I	P
7439-92-1	Lead	72.40		JN	I	F
7439-95-4	Magnesium	7760.00				P
7439-96-5	Manganese	145.00			I	P
7439-97-6	Mercury	97.30		IN	(CV
7440-02-0	Nickel	15.90			I	P
7440-09-7	Potassium	1400.00		*	1	A
7782-49-2	Selenium	7.10			1	F
7440-22-4	Silver	61.00			1	P
7440-23-5	Sodium	614.00	U	U	1	P
7440-28-0	Thallium	1.00	U	UW]	F
7440-62-2	Vanadium	202.00		H. H.]	P
7440-66-6	Zinc	615.00		Total To]	P
	Cyanide			1	1	NF

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

MHP748

.ame: Chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): SOIL

Lab Sample ID: 00412-05S

evel (low/med):

LOW

Solids:

97.7

Date Received: 08/03/90

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900.00	-		P
7440-36-0	Antimony	9.80	U	lu	P
7440-38-2	Arsenic	8.40			F
7440-39-3	Barium	133.00			P
7440-41-7	Beryllium	[1.00]	В		P
7440-41-7	Cadmium	1.00	U	U	P
7440-70-2	Calcium	6760.00			P
7440-47-3	Chromium	12.00		51	P
7440-48-4	Cobalt	[4.10]	В		P
7440-50-8	Copper	225.00			P
7439-89-6	Iron	11800.00			P
7439-92-1	Lead	7.40		N	F
7439-95-4	Magnesium	8350.00			P
7439-96-5	Manganese	70.40			P
7439-97-6	Mercury	1.80		JN	CI
7440-02-0	Nickel	7.30	В		P
7440-09-7	Potassium	1940.00		*	A
7782-49-2	Selenium	16.80			F
7440-22-4	Silver	7.00		" E. "	P
7440-23-5	Sodium	2340.00			P
7440-28-0	Thallium	1.00	U	UW	F
7440-62-2	Vanadium	182.00			P
7440-66-6	Zinc	40.20			P
	Cyanide				NI

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:



EPA SAMPLE NO.

MHP749

ame: Chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): SOIL

Lab Sample ID: 00412-06S

Level (low/med): LOW

Date Received: 08/03/90

% Solids:

93.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19300.00	-	100	P
7440-36-0	Antimony	10.30	U	U	P
7440-38-2	Arsenic	24.90		S	F
7440-39-3	Barium	308.00		the state of	P
7440-41-7	Beryllium	1.70			P
7440-41-7	Cadmium	1.10	U	U	P
7440-70-2	Calcium	11900.00			P
7440-47-3	Chromium	16.40			P
7440-48-4	Cobalt	3.00	U	U	P
7440-50-8	Copper	698.00			P
7439-89-6	Iron	14200.00		-	P
7439-92-1	Lead	43.00	-	N	F
7439-95-4	Magnesium	9190.00			P
7439-96-5	Manganese	65.70	-		P
7439-97-6	Mercury	0.76		N	CI
7440-02-0	Nickel	6.60	В		P
7440-09-7	Potassium	3040.00	Ş	J*	A
7782-49-2	Selenium	10.20		1	F
7440-22-4	Silver	7.60		A STATE	P
7440-23-5	Sodium	6460.00			P
7440-28-0	Thallium	1.10	U	U	F
7440-62-2	Vanadium	263.00			P
7440-66-6	Zinc	35.50			P
	Cyanide				NI

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

MHP750

dame: Chemtech Consulting Group Contract: 68-W8-0061

b Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): WATER

Lab Sample ID: 00412-07S

avel (low/med): LOW

Date Received: 08/03/90

solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	951000.00	-		P
7440-36-0	Antimony	156.00			P
7440-38-2	Arsenic	500.00	U	UW	F
7440-39-3	Barium	5800.00	U	U	P
7440-41-7	Beryllium	48.30			P
7440-41-7	Cadmium	821.00			P
7440-70-2	Calcium	141000.00			P
7440-47-3	Chromium	82.80			P
7440-48-4	Cobalt	2040.00			P
7440-50-8	Copper	883000.00			P
7439-89-6	Iron	12000.00			P
7439-92-1	Lead	200.00	U	UNE	F
7439-95-4	Magnesium	20200000.00		0	P
7439-96-5	Manganese		1		P
7439-97-6	Mercury	1.10	1		CV
7440-02-0	Nickel	1050.00			P
7440-09-7	Potassium	8700.00			A
7782-49-2	Selenium	810.00			F
7440-22-4	Silver	14100.00		N	P
7440-23-5	Sodium	53700000.00	1		P
7440-28-0	Thallium	₹84.00	B	E	F
7440-62-2	Vanadium	609.00			P
7440-66-6	Zinc	205000.00			P
	Cyanide				NI

Color Before: GREEN

Clarity Before: CLEAR

Texture:

Color After: GREEN

Clarity After: CLEAR

Artifacts:

Comments:



LS-SE-01

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP751

Name: Chemtech Consulting Group Contract: 68-W8-0061 ab Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): SOIL

Lab Sample ID: 00412-08S

Date Received: 08/03/90

avel (low/med): LOW

solids:

86.1

Sed. Fond Sample Suite

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-41-7 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-95-4 7439-96-5 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-28-0 7440-62-2 7440-66-6	Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide	198.00 1.20 6.30	B	Jn Jn y	PPFPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP

mg/kg = ppm

Color Before: GREY

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:



EPA SAMPLE NO.

MHP752

Chemtech Consulting Group Contract: 68-W8-0061

ab Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): WATER

Lab Sample ID: 00412-09S

wel (low/med): LOW

Date Received: 08/03/90

solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	570.00	-		P
7440-36-0	Antimony	4800.00	U	U	P
7440-38-2	Arsenic	5.00	U	UW	F
7440-39-3	Barium	2900.00	U	U	P
7440-41-7	Beryllium	200.00	U	U	P
7440-41-7	Cadmium	9.10			P
7440-70-2	Calcium	652000.00			P
7440-47-3	Chromium	900.00	U	U	P
7440-48-4	Cobalt	1400.00	U	U	P
7440-50-8	Copper	356.00			P
7439-89-6	Iron	256.00			P
7439-92-1	Lead	20.00	U	UNE	F
7439-95-4	Magnesium	252000.00		0	P
7439-96-5	Manganese	4570.00			P
7439-97-6	Mercury	4.70	- 13		CV
7440-02-0	Nickel	2700.00	U	U	P
7440-09-7	Potassium	10100.00	112		A
7782-49-2	Selenium	30.00	U	UW	F
7440-22-4	Silver	76.10		TN	P
7440-23-5	Sodium	1860000.00		0	P
7440-28-0	Thallium	50.00	U	UW	F
7440-62-2	Vanadium	2400.00	U	li)	P
7440-66-6	Zinc	68.10			P
	Cyanide				NR

olor Before: COLORLESS Clarity Before: CLEAR Texture:

olor After: COLORLESS Clarity After: CLEAR

Artifacts:

omments:



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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP753

Name: Chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): SOIL

Lab Sample ID: 00412-10S

Level (low/med): LOW

Date Received: 08/03/90

* solids: 73.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9540.00	-		P
7440-36-0	Antimony	13.10	U	u	P
7440-38-2	Arsenic	40.20			F
7440-39-3	Barium	143.00			P
7440-41-7	Beryllium	[1.20]			P
7440-41-7	Cadmium	1.40	U	U	P
7440-70-2	Calcium	19900.00			P
7440-47-3	Chromium	19.20			P
7440-48-4	Cobalt	3.80	U	U	P
7440-50-8	Copper	1010.00			P
7439-89-6	Iron	52500.00		-	P
7439-92-1	Lead	202.00		JN	F
7439-95-4	Magnesium	3260.00		- Care	P
7439-96-5	Manganese	58.20		1. 18.21	P
7439-97-6	Mercury	4.40		JN	CV
7440-02-0	Nickel	7.40	U	1	P
7440-09-7	Potassium	3560.00		*	A
7782-49-2	Selenium	3.00			F
7440-22-4	Silver	8.30			P
7440-23-5	Sodium	7010.00			P
7440-28-0	Thallium	1.40		UW	F
7440-62-2	Vanadium	132.00	1	-	P
7440-66-6	Zinc	54.60	1		P
	Cyanide				NF

Color Before: BROWN Clarity Before:

Texture: MEDIUM

Color After: YELLOW Clarity After:

Artifacts:

Comments:



15-5-1-04

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP754

Name: Chemtech Consulting Group Contract: 68-W8-0061

Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): WATER

Lab Sample ID: 00412-11S

Level (low/med): LOW

Date Received: 08/03/90

& Solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	286.00	-		P
7440-36-0	Antimony	4800.00	U		P
7440-38-2	Arsenic	5.00	U	U W	F
7440-39-3	Barium	2900.00	U	U	P
7440-41-7	Beryllium	200.00	U	u	P
7440-41-7	Cadmium	500.00	U	u	P
7440-70-2	Calcium	661000.00			P
7440-47-3	Chromium	9.10	В		P
7440-48-4	Cobalt	1400.00	U	4	P
7440-50-8	Copper	253.00		THE REAL PROPERTY.	P
7439-89-6	Iron	234.00			P
7439-92-1	Lead	20.00	U	UNE	F
7439-95-4	Magnesium	251000.00		0	P
7439-96-5	Manganese	4500.00			P
7439-97-6	Mercury	1.40			CV
7440-02-0	Nickel	2700.00	U	U	P
7440-09-7	Potassium	10300.00		D. S. C.	A
7782-49-2	Selenium	30.00	U	UW	F
7440-22-4	Silver	73.40		TN	P
7440-23-5	Sodium	1860000.00		0	P
7440-28-0	Thallium	50.00		UW	F
7440-62-2	Vanadium	2400.00	U	U	P
7440-66-6	Zinc Cyanide	[19.10	(1		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR

Artifacts:

Comments:



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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP755

Chemtech Consulting Group Contract: 68-W8-0061

Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

atrix (soil/water): SOIL

Lab Sample ID: 00412-12S

evel (low/med): LOW

Date Received: 08/03/90

solids:

73.4

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	С	Q	М
7429-90-5	Aluminum	11800.00	-		P
7440-36-0	Antimony	13.10	U	14	P
7440-38-2	Arsenic	32.20			F
7440-39-3	Barium	173.00			P
7440-41-7	Beryllium	1.70			P
7440-41-7	Cadmium	1.40	U	U	P
7440-70-2	Calcium	20900.00			P
7440-47-3	Chromium	19.30			P
7440-48-4	Cobalt	[4.50	B		P
7440-50-8	Copper	1210.00	1		P
7439-89-6	Iron	39600.00	1	-	P
7439-92-1	Lead	85.00		JN	F
7439-95-4	Magnesium	4370.00			P
7439-96-5	Manganese			-	P
7439-97-6	Mercury	5.40		JN	CI
7440-02-0	_	9.90	E	3	P
7440-09-7		3300.00		*	A
7782-49-2		2.60			F
7440-22-4		8.20)		P
7440-23-5		5730.00			P
7440-28-0		1.40	I	JVW	F
7440-62-2		149.00		18-74	P
7440-66-6		88.10			P
	Cyanide				N
			_ _	_	

Color Before: GREY

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

000014

Comments:

EPA SAMPLE NO.

MHP756

Code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

chemtech Consulting Group Contract: 68-W8-0061

Matrix (soil/water): SOIL

Lab Sample ID: 00412-13S

Level (low/med): LOW

Date Received: 08/03/90

solids:

87.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	25200.00	-		P
7440-36-0	Antimony	11.00	U	U	P
7440-38-2	Arsenic	13.60			F
7440-39-3	Barium	146.00			P
7440-41-7	Beryllium	1.60			P
7440-41-7	Cadmium	1.40			P
7440-70-2	Calcium	58400.00			P
7440-47-3	Chromium	17.20			P
7440-48-4	Cobalt	13.60	-		P
7440-50-8	Copper	1680.00			P
7439-89-6	Iron	21300.00		-	P
7439-92-1	Lead	48.00		JN	F
7439-95-4	Magnesium	26100.00			P
7439-96-5	Manganese	451.00			P
7439-97-6	Mercury	2.80		JN	CV
7440-02-0	Nickel	23.10		-	P
7440-09-7	Potassium	9490.00		*	A
7782-49-2	Selenium	1.40		T	F
7440-22-4	Silver	5.70	1		P
7440-23-5	Sodium	16000.00			P
7440-28-0	Thallium	1.10	U	UW	F
7440-62-2	Vanadium	49.70			P
7440-66-6	Zinc	621.00			P
	Cyanide				NF
			1_		

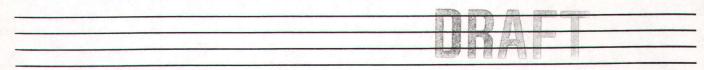
Color Before: RED Clarity Before:

Texture: MEDIUM

Color After: COLORLESS Clarity After:

Artifacts:

Comments:



EPA SAMPLE NO.

MHP757

chemtech Consulting Group Contract: 68-W8-0061

Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): WATER

Lab Sample ID: 00412-14S

Level (low/med): LOW

Date Received: 08/03/90

} Solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	518.00	-		P
7440-36-0	Antimony	48.00	U	100	P
7440-38-2	Arsenic	5.00	U	UW	F
7440-39-3	Barium	41.60	В		P
7440-41-7	Beryllium	2.00	U		P
7440-41-7	Cadmium	5.00	U	u	P
7440-70-2	Calcium	34700.00		C FTRE	P
7440-47-3	Chromium	9.00	U	U	P
7440-48-4	Cobalt	14.00	U	y	P
7440-50-8	Copper	21.10	В		P
7439-89-6	Iron	339.00		-	P
7439-92-1	Lead	2.00	U	UN	F
7439-95-4	Magnesium	9450.00		0	P
7439-96-5	Manganese	14.90			P
7439-97-6	Mercury	0.57			CI
7440-02-0	Nickel	27.00			P
7440-09-7	Potassium	1000.00	U	U	A
7782-49-2	Selenium	3.00	1	U	F
7440-22-4	Silver	8.00	U	UIN	P
7440-23-5	Sodium	5690.00		U	P
7440-28-0	Thallium	5.00	U	UW	F
7440-62-2	Vanadium	24.00	U	U	P
7440-66-6	Zinc	22.30			P
	Cyanide				NI

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:



EPA SAMPLE NO.

MHP758

Name: Chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

matrix (soil/water): SOIL

Lab Sample ID: 00412-15S

Level (low/med): LOW

Date Received: 08/03/90

% Solids:

79.1

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23900.00	-		- P
7440-36-0	Antimony	12.10	U	U	P
7440-38-2	Arsenic	6.90			F
7440-39-3	Barium	132.00			P
7440-41-7	Beryllium	1.40			P
7440-41-7	Cadmium	1.30	U	14	P
7440-70-2	Calcium	72600.00		THE LOCAL	P
7440-47-3	Chromium	11.60			P
7440-48-4	Cobalt	6.40	В		P
7440-50-8	Copper	58.40			P
7439-89-6	Iron	17700.00			P
7439-92-1	Lead	5.10	U	UNW	F
7439-95-4	Magnesium	24400.00		U	P
7439-96-5	Manganese	453.00			P
7439-97-6	Mercury	1.90		IN	CV
7440-02-0	Nickel	13.70		V	P
7440-09-7	Potassium	11100.00		*	A
7782-49-2	Selenium	0.76	U	UW	F
7440-22-4	Silver	2.00	U	U	P
7440-23-5	Sodium	774.00	U	U	P
7440-28-0	Thallium	1.30	U	UW	F
7440-62-2	Vanadium	36.50			P
7440-66-6	Zinc	72.00			P
	Cyanide				NF
		4 7 1010	1_		

Color Before: BROWN

Clarity Before:

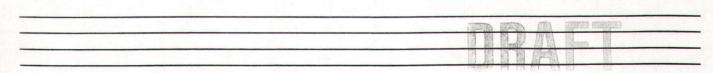
Texture: MEDIUM

Color After: COLORLESS Clarity After:

Artifacts:

Comments:

00001:



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TNORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP759

chemtech Consulting Group Contract: 68-W8-0061

code: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

matrix (soil/water): WATER

Lab Sample ID: 00412-16S

Level (low/med):

Date Received: 08/03/90

* solids:

0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200.00	-		P
7440-36-0	Antimony	48.00	U	U	P
7440-38-2	Arsenic	5.00	U	U	F
7440-39-3	Barium	42.90	В		P
7440-41-7	Beryllium	2.00	0	U	P
7440-41-7	Cadmium	5.00	U	U	P
7440-70-2	Calcium	33900.00			P
7440-47-3	Chromium	9.00			P
7440-48-4	Cobalt	14.00		U	P
7440-50-8	Copper	21.00	U	U	P
7439-89-6	Iron	141.00			P
7439-92-1	Lead	2.00	U	UN	F
7439-95-4	Magnesium	9150.00		,	P
7439-96-5	Manganese	12.00	U	U	P
7439-97-6	Mercury	0.36			CI
7440-02-0	Nickel	27.00	U	U	P
7440-09-7	Potassium	1000.00	U	U	A
7782-49-2	and the comment of th	3.00	U	UW	F
7440-22-4		8.00	U	UN	P
7440-23-5		5760.00	1		P
7440-28-0	Thallium	5.00	U	UW	F
7440-62-2		24.00		-	P
7440-66-6	Zinc	11.00		10	P
	Cyanide				NI

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

45-SE-06

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MHP760

chemtech Consulting Group Contract: 68-W8-0061

cde: CHEM Case No.: 14662 SAS No.: 5512HQ SDG No.: MHP744

Matrix (soil/water): SOIL

Lab Sample ID: 00412-17S

Level (low/med):

LOW

Date Received: 08/03/90

solids:

78.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6610.00	-		P
7440-36-0	Antimony	12.20	U	19	P
7440-38-2	Arsenic	[2.40]	B		F
7440-39-3	Barium	81.30			P
7440-41-7	Beryllium	(0.70)	В	the second	P
7440-41-7	Cadmium	1.30	U	lu	P
7440-70-2	Calcium	31000.00			P
7440-47-3	Chromium	8.80			P
7440-48-4	Cobalt	6.60	В		P
7440-50-8	Copper	33.00			P
7439-89-6	Iron	10900.00			P
7439-92-1	Lead	5.10	U	UN	F
7439-95-4	Magnesium	5220.00		0	P
7439-96-5	Manganese	195.00		T	P
7439-97-6	Mercury	2.60		JN	CV
7440-02-0	Nickel	10.40		-	P
7440-09-7	Potassium	1960.00		*	A
7782-49-2	Selenium	0.76	U	UW	F
7440-22-4	Silver	2.00	U	13	P
7440-23-5	Sodium	779.00	U	U	P
7440-28-0	Thallium	1.30	U	UW	F
7440-62-2	Vanadium	33.40			P
7440-66-6	Zinc	37.60	-		P
	Cyanide				NE

Color Before: GRAY

Clarity Before:

Texture:

MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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